SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[*The* MINING JOURNAL *is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.*]

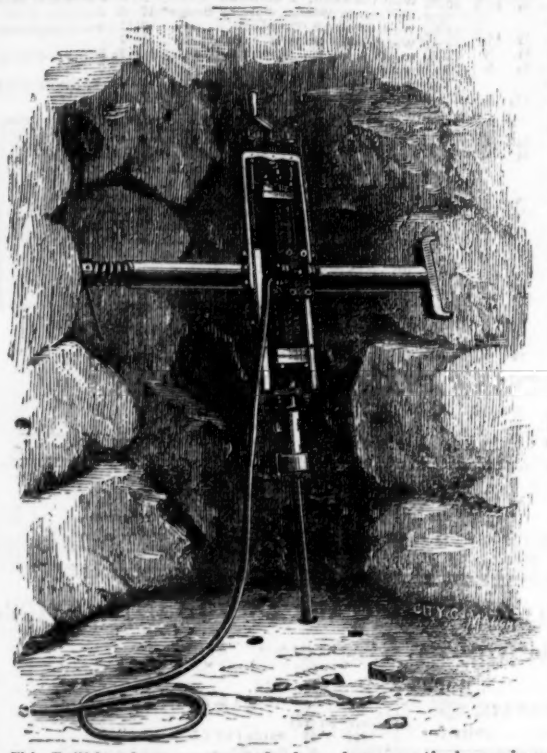
No. 2544.—VOL. LIV. LONDON, SATURDAY, MAY 24, 1884. PRICE (WITH THE JOURNAL) SIXPENCE BY POST £1 1s. PER ANNUM.

FIRST SILVER MEDAL, ROYAL CORNWALL POLYTECHNIC —Highest Award for Effectiveness in Boring, and Economy in the Consumption of Air

JUBILEE EXHIBITION, 1882.

THE PATENT

"CORNISH" ROCK DRILL.



This Drill has been constructed after a long practical experience in the requirements necessary for Mines, and has more than realised the expectations of its inventors. The chief objects in view were GREATER DURABILITY AND LESS LIABILITY TO DISARRANGEMENT; but it has also proved itself more EFFECTIVE AND ECONOMICAL.

We are now prepared to enter into any reasonable arrangement so as to enable users to judge of its merits, as we are thoroughly convinced that we can offer the BEST ROCK DRILL IN THE MARKET.

Further particulars on application to the Makers—

HOLMAN BROTHERS,
CAMBORNE FOUNDRY AND ENGINE WORKS,
CAMBORNE, CORNWALL.

THE PATENT

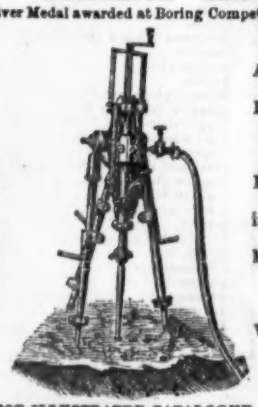
"ECLIPSE" ROCK-DRILL

AND

"RELIANCE AIR-COMPRESSOR."

First Silver Medal awarded at Boring Competition, East Pool Mine, Sept. 1883.

SILVER MEDEL—PARIS, 1878—HIGHEST AWARD



Are NOW SUPPLIED to the ENGLISH, FOREIGN, and COLONIAL GOVERNMENTS, and are also IN USE in a number of the largest MINES, RAILWAYS, QUARRIES, and HARBOUR WORKS in GREAT BRITAIN and ABROAD.

FOR ILLUSTRATED CATALOGUE AND PRICES, apply to—
HATHORN & CO., 22, Charing Cross, London, S.W.

SOLID DRAWN BRASS AND COPPER BOILER TUBES

FOR LOCOMOTIVE OR MARINE BOILERS

EITHER

MUNTZ'S OR GREEN'S PROCESS

MUNTZ'S METAL COMPANY (LIMITED),
FRENCH WALLS,
NEAR BIRMINGHAM.

LONDON AGENTS—CHARLES MOSS and Co., 2, Rood Lane, London, E.C.

PATENT

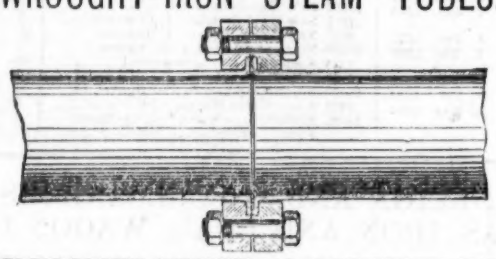
"INGERSOLL ROCK DRILL."

MEDAL AND HIGHEST AWARDS.

1872—American Institute.
1873—Ditto.
1874 — London International.
1875—Manchester.
1875—Leeds.
1875—Cornwall.
1875—Rio de Janeiro.
1876—Australia.
1876—Philadelphia.
1877—Cornwall.
1877—Mining Institute.
1878—Paris.

We claim 40 per cent. greater effective drilling power.

WROUGHT-IRON STEAM TUBES.



TUBES FOR BOILERS, PERKINS'S, and other HOT-WATER SYSTEMS.

For Catalogues of Rock Drills, Air Compressors, Steel or Iron Steam Tubes, Boiler Tubes, Perkins's Tubes, Pneumatic Tubes, Boring Tubes, and all kinds of Machinery and Mining Plant, apply to—

LE GROS, MAYNE, LEAVER, & CO.
60, Queen Victoria Street, London, E.C.

NEW PATENT

Stone Breakers and Grinding Machinery.

CAUTION TO PURCHASERS.

Do not buy any Stone Breaker or Pulverising Machines until you have seen ours. Price Lists and Testimonials free on application.

A Machine as will break 40 tons per day for **£45**.

MACHINES LET OUT ON HIRE, OR ON THE HIRE SYSTEM.

Apply S. MASON and Co.,
STONE MACHINE WORKS, LEICESTER, ENGLAND.

MACHINES MADE WITH SECTIONAL FACED JAWS, OR ANY OTHER.

ROCK DRILLS

FOR

HAND AND POWER.

DUNCAN BROS.,
32, QUEEN VICTORIA STREET,
LONDON, E.C.

AIR COMPRESSORS,

With R. SCHRAM'S Patent Inlet and Outlet Valves.

BOILERS, TURBINES.

SCHRAM IMPROVED PATENT

ROCK DRILL.

1500 in Use in all Parts of the World.

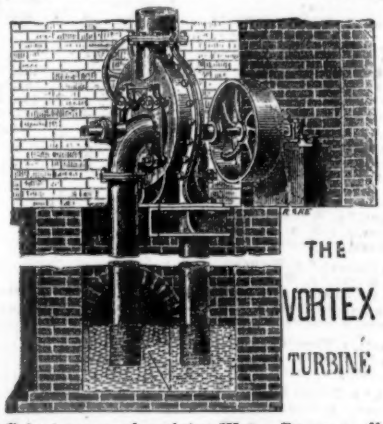
Complete Rock Boring Plants of the most approved construction for Railway Tunnels, Quarries, Shaft Sinking, Level Driving, Stoping, and Submarine Blasting.

All Kinds of Mining Machinery.

ESTIMATES AND FULL PARTICULARS ON APPLICATION.

RICHARD SCHRAM & CO.,
9, NORTHUMBERLAND STREET, CHARING CROSS, LONDON.

GILBERT GILKES & CO.,
KENDAL, ENGLAND,
LATE
WILLIAMSON BROS.



THE VORTEX TURBINE

A most efficient means of applying Water Power to all kinds of Machinery.

Largely used in DRIVING AIR COMPRESSORS, PUMPING WORKING ORE-CRUSHING MACHINERY, and for other purposes in connection with MINING.

Successfully used in ELECTRIC LIGHTING, and in utilising DISTANT WATER POWER by means of ELECTRICITY.

A Pamphlet containing a full description of the Vortex, with several Illustrations and a number of Testimonials, can be obtained on application.

"THE PATENT ACCESSIBLE"

CENTRIFUGAL PUMP

Is the only Pump from which the disc can be removed by breaking the joint on a single face only.

Manufactured by CHARLES L. HETT,
HYDRAULIC ENGINEER,
Maker of
IMPROVED CENTRE VENT,
TURBIN
WATER WHEELS,
Horse, Steam and Wind Power
PUMPS.

Catalogues on Application.

ANCHOLME FOUNDRY, BRIGG, ENGLAND.

BELL'S ASBESTOS.

BELL'S PATENT ASBESTOS BLOCK PACKING, for High Pressure Engines. This Packing has been specially designed to overcome the difficulties experienced by engineers and others in the practical working of engines of the most modern type of construction. The greatly increased skill and workmanship now obtained in the construction of engines and boilers have led to a rapid increase in the working pressure, the object being the attainment of a high rate of speed combined with economical working, the practical advantage of which, however, cannot be realised unless the Packings are so constructed as to avoid stoppages for the purpose of re-packing the stuffing boxes. It is now a recognised fact that the most perfect heat-resisting material suitable for the purpose of a Packing is Asbestos, but to ensure a successful application of this fibre, great skill is required in manufacture. In this Packing the Asbestos is woven into a stout cloth, and owing to the peculiar way in which it is manipulated, great elasticity is imparted to the Packing. This Packing has met with the most unqualified approval wherever it has been used, and on being taken out after about twelve months, working at 70 lb. pressure, it has been found to be in a perfect state of preservation, and was therefore replaced. The Patent Block Packing is square, as Fig. 1, and Figs. 2 and 3 represent the Round Block Packing with solid and hollow rubber core, and Fig. 4 without core, but with rubber inlaid. An Engineer writes as follows:—"The Asbestos Block Packing works splendidly. I have never seen its equal. We keep our gland nuts so that you can move them with finger and thumb, and can maintain a constant vacuum of 28½ in." As these packings are extensively imitated, and as it is a common practice among dealers and agents to supply the cheaper manufactures at my list prices, users are requested to see that the packing supplied to them bears my trade mark.

The goods of this house are of the highest quality only, and no attempt is made to compete with other manufacturers by the supply of inferior materials at low prices. All orders must be sent direct to the undermentioned depôts and not through Agents or Factors.

BELL'S ASBESTOS BOILER PRESERVATIVE. This useful mixture by absorbing the free oxygen that is in the water entirely checks pitting and corrosion. It also disintegrates incrustation so immediately as to prevent its adhering to the plates. Not only is a great economy of fuel effected by keeping boilers clean, but the risk of having the plates burned is thereby obviated. It has been computed that 1/16 in. thick of incrustation causes a waste of 15 per cent. of coal; ⅛ in., 60 per cent.; ¼ in., 150 per cent. Thus the Preservative avoids the great risks which are inseparable from scaled plates, lengthens the life of a boiler and covers its own cost a hundred-fold by economy of fuel. It is entirely harmless, and has no injurious action on metals. It can be put into the feed tank or boiler, as may be most convenient. Sold in drums and casks bearing the Trade Mark, without which none is genuine.

BELL'S ASBESTOS YARN and SOAPSTONE PACKING

for Locomotives, and all Stationary Engines running at very high speed with intense friction.

The following Testimonial refers to this Packing:—

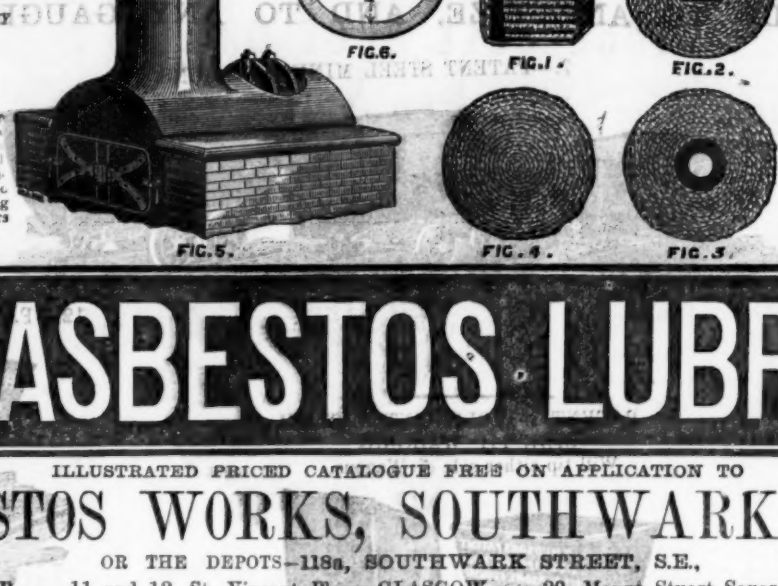
Festiniog Railway, Locomotive Superintendent's Office,
Portmadoc, January 13, 1883.

Mr. John Bell, 118, Southwark-street, S.E.

DEAR SIR,

I have much pleasure in saying that the Asbestos Yarn and Soapstone Packing gives every satisfaction; indeed, better than we expected. We have a locomotive packed with it, which has been running five months (and think of the piston speed with our small wheels). I think the Soapstone a great improvement, as it keeps the packing elastic, and prevents it getting hard. I am very pleased with its working, and also the very low price for such good lasting Packing. The Asbestos Yarn we find is very useful, and answers admirably. Yours truly,

(Signed) W. WILLIAMS.



BELL'S ASBESTOS BOILER AND PIPE COVERING COMPOSITION, for coating every class of steam pipes and boilers, non-combustible and easily applied when steam is up; adheres to metals and preserves them from rust; prevents the unequal expansion and contraction of boilers exposed to weather; covers 50 per cent. more surface than any other coating, and is absolutely indestructible. It can be stripped off after many years' use, mixed up with 20 per cent. of fresh, and applied again. The composition is supplied dry, and is only to be mixed with water to the consistency required for use.

A Horizontal Boiler, 17 ft. 6 in. long, 15-H.P., gave the following results:—

Temperature on Plates - - - 186 deg.
" " Covering - - 94 deg.

One ton of coal was saved per week, and although the fire was raked out every evening, 20 lbs. of steam were found in the boiler next morning.

The following Testimonial refers to this Covering:—

Offices of the Wimbledon Local Board, Wimbledon,
Nov. 28th, 1883.

DEAR SIR,—It may interest you to know that we save exactly 40 per cent. in fuel through using your covering.—Yours truly, W. SANTO CRIMP, C.E., F.G.S.

BELL'S ASBESTOS and INDIA-RUBBER WOVEN TAPE and SHEETING, for making every class of Steam and Water Joints. It can be bent by hand to the form required, without puckering, and is especially useful in making joints of manhole and mudhole doors; also for large "still" joints where boiling fat and steam have to be resisted. It is kept in stock in rolls of 100 ft., from ¼ in. (Fig. 6) to 3 in. wide, and any thickness from 1/16 in. upwards. Manhole covers can be lifted many times before the renewal of the jointing material is necessary. The same material is made up into sheets about 40 in. square, and each sheet bears the Trade Mark, without which none is genuine. It is very necessary to guard against imitations of this useful material, and to secure themselves against being supplied with these inferior articles at my price, users are recommended to see that every 10 ft. length of the Asbestos Tape purchased by them bears the Trade Mark.

BELL'S SPECIAL LONDON-MADE ASBESTOS MILLBOARD, for Dry Steam Joints, made of the best Asbestos fibre, is well-known for its toughness and purity, and is absolutely free from the injurious ingredients frequently used to attain an appearance of finish, regardless of the real utility of the material. Made in sheets measuring about 40 in. square, from 1-64th in. to 1 in., and ½ millimetre to 25 millimetres thick. Each sheet bears the Trade Mark.

BELL'S ASBESTOS EXPANSION SHEETING (PATENT).

This Sheeting is another combination of Asbestos with India-rubber, giving to the steam user the special advantages of both materials.

The India-rubber Washer is protected from the action of heat and grease by an outer coating of vulcanised Asbestos Cloth, thus producing an excellent joint where expansion and contraction render other materials unserviceable.

This material is admirably suited to steam pipe joints and every class of valve.

Valves made of this material are very durable, as they are not subject to injury by oil.

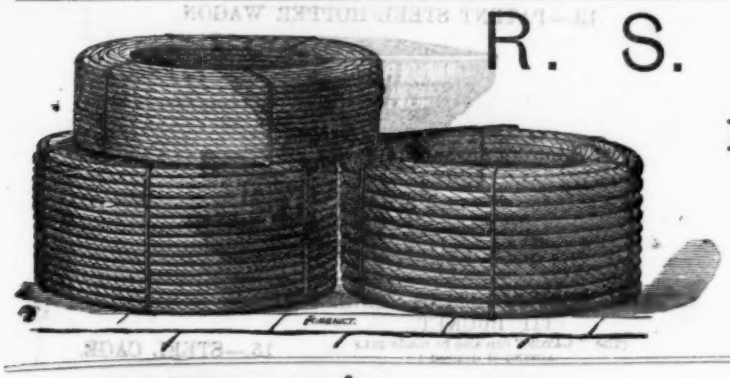
BELL'S "ASBESTOS LUBRICANT."

ILLUSTRATED PRICED CATALOGUE FREE ON APPLICATION TO

BELL'S ASBESTOS WORKS, SOUTHWARK, LONDON, S. E.

OR THE DEPOTS—118a, SOUTHWARK STREET, S.E.,

Victoria Buildings, Deansgate, MANCHESTER. 11 and 13, St. Vincent Place, GLASGOW. 39, Mount Stuart Square, CARDIFF. 21, Ritter Strasse, BERLIN.



R. S. NEWALL AND CO.,

Sole Patentees of Untwisted Wire Rope.

Iron & Steel Ropes of the highest quality for Collieries, Railways, Suspension Bridges, &c.

PATENT STEEL FLEXIBLE ROPES AND HAWSERS.

IRON STEEL, AND COPPER CORDS. LIGHTNING CONDUCTORS.

COPPER CABLES of high Conductivity for Electric Light and Power.

London: 130, STRAND, W.C. Liverpool: 7, NEW QUAY.

Glasgow: 68, ANDERSTON QUAY.

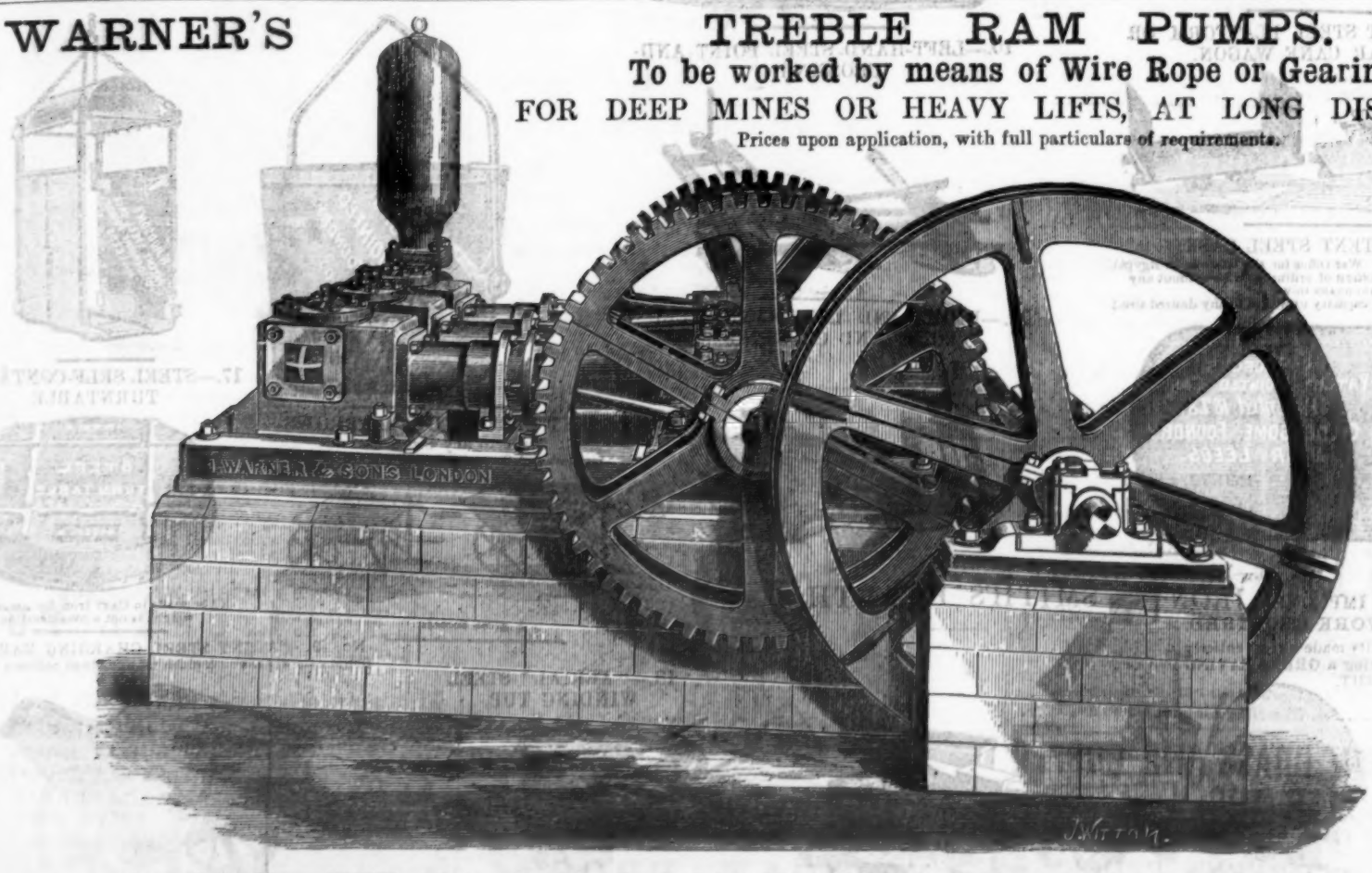
MANUFACTORY: GATESHEAD-ON-TYNE.

WARNER'S TREBLE RAM PUMPS.

To be worked by means of Wire Rope or Gearing.

FOR DEEP MINES OR HEAVY LIFTS, AT LONG DISTANCES.

Prices upon application, with full particulars of requirements.



As supplied to Messrs BOWES, of Springwell Colliery, Gateshead, for a Lift of (600) Six hundred feet vertical through two miles of pipes.

JOHN WARNER AND SONS, THE CRESCENT FOUNDRY, CRIPPLEGATE, LONDON, E.C.

R. HUDSON'S

Patent Steel Trucks, Points and Crossings,

PORTABLE RAILWAY, STEEL BUCKETS, &c., &c.

Telephone No. 14.
In connection with the Leeds Exchange, and all the principal Hotels and places of business in the town.

GILDERSOME FOUNDRY, NEAR LEEDS.

(Near Gildersome Station, G.N.R. Main Line, Bradford to Wakefield and London, via Laisterdyke and Ardsley Junctions.)

Registered Telegraphic Address:—"GILDERSOME, LEEDS." A. B. C. Code used.

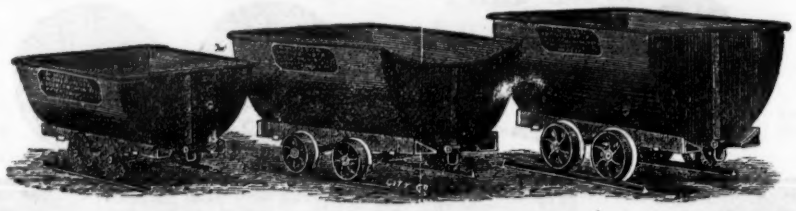
UPWARDS of 25,000 of these Trucks and Wagons have been supplied to the South African Diamond Mines; American, Spanish, Indian, and Welsh Gold, Silver, Copper, and Lead Mines; Indian and Brazilian Railways, and to Railway Contractors, Chemical Works, Brick Works, and Coal and Mineral Shippers, &c., &c., and can be made to lift off the underwork, to let down into the hold of a vessel, and easily replaced. They are also largely used in the Coal and other Mines in this country, and are the LIGHTEST, STRONGEST, and most CAPACIOUS made, infinitely stronger and lighter than wooden ones, and are all fitted with R. H.'s Patent "Rim" round top of wagons, requiring no rivets, and giving immense strength and rigidity. End and body plates are also joined on R. H.'s patent method, dispensing with angle-irons or corner plates.

Patented in Europe, America, Australia, India, and British South Africa, 1875, 1877, 1878, 1881, and 1883.
N.B:—The American, Australian, Indian, and Spanish Patents on Sale.

CAN BE MADE TO ANY SIZE, AND TO ANY GAUGE OF RAILS.

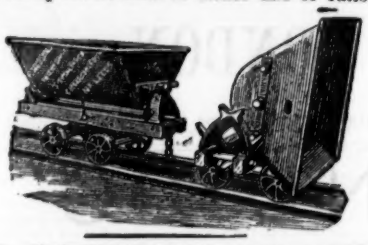
1.—PATENT STEEL END TIP WAGONS.

7.—PATENT STEEL MINING WAGONS.

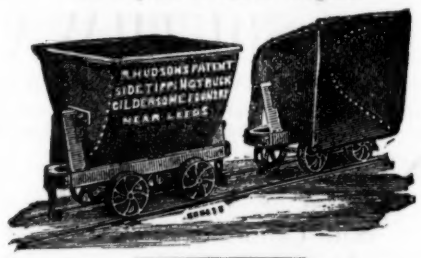


12.—PATENT STEEL HOPPER WAGON, WITH BOTTOM DOORS.

2. PATENT UNIVERSAL TRIPLE-CENTRE STEEL TIPPING TRUCK,
Will tip either SIDE or either END of rails.



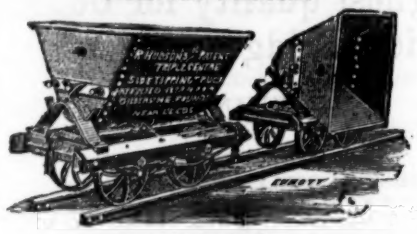
8.– PATENT DOUBLE-CENTRE STEEL SIDE TIP WAGONS,
Will tip either side of Wagons.



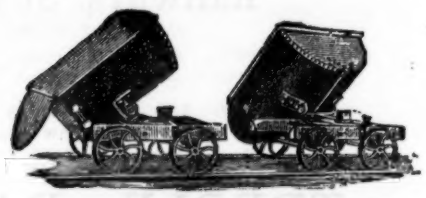
13.—PATENT STEEL HOPPER WAGON.

One man can EASILY tip ANY WEIGHT in these wagons.

3.—PATENT TRIPLE-CENTRE STEEL SIDE TIP WAGONS.

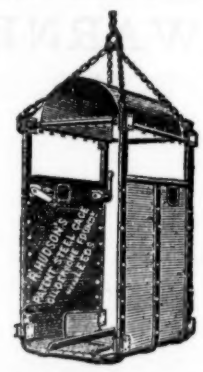


9.—PATENT STEEL ALL-ROUND TIP WAGON.

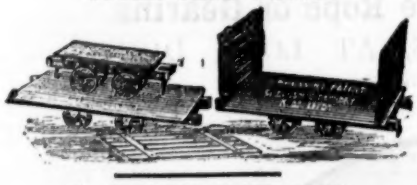


14.—SELF-RIGHTING STEEL TIP BUCKET.
(The "CATCH" can also be made SELF ACTING if desired.)

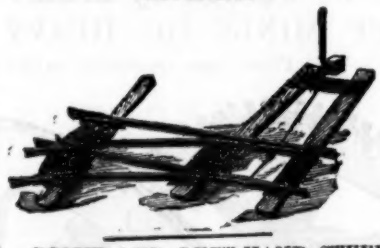
15.—STEEL CAGE.



4. PATENT STEEL PLATFORM OR SUGAR CANE WAGON.

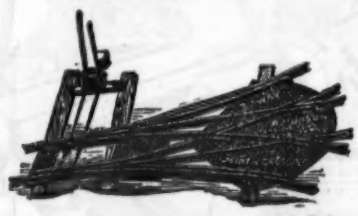


10.—LEFT-HAND STEEL POINT AND CROSSING.



5.—PATENT STEEL CASK.
As supplied to H.M. War Office for the late war in Egypt).
DOUBLE the STRENGTH of ordinary Casks without any INCREASE in weight.
(Made from 10 gals. capacity UPWARDS to any desired size.)

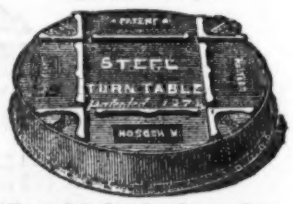
11.—RIGHT AND LEFT-HAND STEEL POINT AND CROSSING.



16.—PATENT STEEL WHEELBARROWS.
Made to any Size.
Lightest and Strongest in the Market.

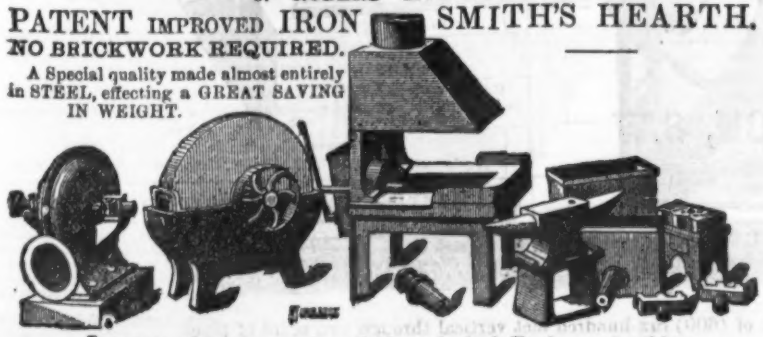
A great success.

17.—STEEL SELF-CONTAINED TURNTABLE.



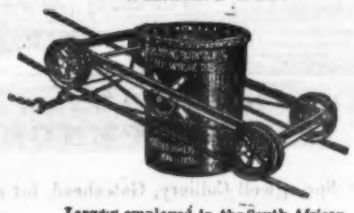
(Also made in CAST Iron for use where weight is not a consideration.

6.—ROBERT HUDSON'S
PATENT IMPROVED IRON SMITH'S HEARTH.
NO BRICKWORK REQUIRED.
A Special quality made almost entirely in STEEL, effecting a GREAT SAVING IN WEIGHT.



Large numbers in use by all the principal Engineers in this country and abroad.

18.—"AERIAL" STEEL WINDING TUB.



Largely employed in the South African Diamond Fields.

No. 19.—PATENT STEEL CHARGING BARROW,
DOUBLE the STRENGTH & much LIGHTER than ordinary Barrow

ALL KINDS OF BOLTS NUTS, AND RIVETS MADE TO ORDER ON THE PREMISES

Pumping Engines for Mines, Water Works, Sewage Works, and General Purposes.

CATALOGUES ON

PUMPING & MINING MACHINERY.

HATHORN, DAVEY, & Co., LEEDS.

Hydraulic Pumps, Winding Engines, Air Compressors, Man Engines, Capstans, &c., &c.

APPLICATION.

BRAUN AND BLOEM'S

CELEBRATED

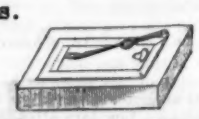
DETONATORS—"EAGLE" BRAND.

TRADE MARK.

The most powerful Percussion Caps for exploding Dynamite, developing its fullest strength.

PACKED IN THEIR PATENT TIN BOXES.

PATENT No. 3665.



A new invention, doing away with the very dangerous operation generally in use of inserting cutting tools when it is necessary to open the outer tin box.

Sold by WM. BRODERSEN, 79, Leadenhall-street, London, E.C.

SOLE AGENT FOR THE UNITED KINGDOM AND THE COLONIES.

DEUTSCHE SPRENGSTOFF ACT.-GES.

TRADE MARK.

Deutsche Sprengstoff A.G. Hamburg.

(GERMAN EXPLOSIVES COMPANY, LIMITED),

HAMBURG.

DYNAMITE

Of the HIGHEST DESCRIPTION, and of the maximum strength allowed by the British Explosives Act (75 per cent. Nitroglycerine).

HEAD OFFICE: HAMBURG, PLAN, 9.

LONDON AGENT: MR. WM. BRODERSEN, 79, LEADENHALL STREET, E.C.

SHIPMENTS EFFECTED TO ALL PARTS. STOCK KEPT IN LONDON AND NUMEROUS COUNTRY MAGAZINES.

GEORGE EGESTORFF'S DETONATORS

UNRIVALLED IN QUALITY.

REGISTERED TRADE MARK. GEORGE EGESTORFF, LINDEN NEAR HANOVER. GE 100 X DETONATING CAPS. AMMUNITION WORKS.

FIRST PRIZE MELBOURNE 1880.

MANUFACTURED BY

LINDENER ZÜNDHÜTCHEN- UND THONWAAREN-FABRIK

LINDEN, NEAR HANOVER, GERMANY.

Shipments from Stock on Hand in THE THAMES, also from HAMBURG or ANTWERP.

Sole Agent:—

C. G. MUELLER, 32, St. James' Street, LONDON, S.W.,

TO WHOM ALL ORDERS SHOULD BE ADDRESSED.

SILVER MEDAL (HIGHEST AWARD) MELBOURNE, 1881.

TUBES

JOHN SPENCER,

Globe Tube Works, WEDNESBURY,

AND 3, QUEEN STREET PLACE, CANNON STREET, LONDON, E.C.

FIRST PRIZE, SYDNEY, 1880.

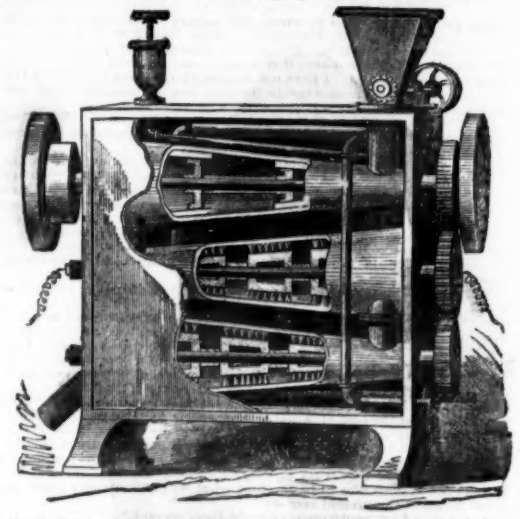
TUBES AND FITTINGS for Gas, Steam, and Water; Galvanised, Enamelled, and Hydraulic Tubes; Boiler Tubes and Fittings; Gas Fitters' Tools; Brass Cocks, &c.

ANTI-CORRODO TUBES AND FITTINGS COATED BY BARFF'S RUSTLESS PROCESS

NOVEL ELECTRO METALLURGICAL MACHINE.

PROFESSOR JAMES MANES AND SONS call the attention of miners, mineowners, capitalists, and others interested in the working of gold or silver mines to their new Electro Metallurgical Machine for extracting fine and rusty gold from sands or tailings of stamp mills, or the sands of hydraulic gold diggings, or from the black sands on the coast of Oregon or California, and other parts of the world where gold is found.

The problem that has long troubled the worker of free-milling gold and silver ores is a method to save the mineral now lost in the tailings of stamp mills or flumes. This alone, if it could be saved, would amount to many million dollars profit each year, besides enabling the working of much territory which is now lying idle for want of an economical and thorough process of treatment.



Prof. James Manes and Sons, of Denver, Colorado, U.S., have invented a machine (represented in the above engraving) which it is claimed will save nearly the entire amount of mineral which passes through it, the loss not being over 10 per cent., and in many cases not in excess of half that amount. The machine is a cheap and practical process—it never need stop for charging or cleaning up, being nearly self-acting. Steam, electricity, and mercury are used in the process of extracting the mineral

This machine or amalgamator is adapted for free-milling gold or silver ores, or refractory after roasting. It consists of a series of three or more large cylinders, wider at one end than the other, placed one above the other in a horizontal position, a shaft or spindle running through the centre of each.

The ore and mercury are fed into the first cylinder, passing into the second, and then to the third. The first cylinder is furnished with steel mullers which nearly touch the sides of the cylinder, and revolve at a good rate of speed, mixing the mercury and ore. The second cylinder is furnished with large steel brushes attached to the shaft or spindle, revolving at a high rate of speed; through this a current of electricity is furnished by a Westinghouse dynamic electro machine, which materially assists in gathering the particles of very fine gold together, and thoroughly amalgamating the metal and mercury. The third cylinder is similarly furnished to the second; into this the amalgam passes, and is again acted upon and mixed by the brushes to catch any gold which might have escaped amalgamation in the second. A fourth cylinder may be used if found necessary.

The amalgamated pulp then passes through a revolving copper drum, plated with quicksilver inside. As the drum revolves it takes up the most part of the amalgamated gold. As the inside of the drum is constantly washed with a spray of water from perforated pipes fixed inside of said drum, a clean-plated surface is constantly brought in contact with the pulp or tailings as it passes out from the cylinders. After leaving the drum it falls down on to incline copper plates, the same as is now used in stamp mills.

The amalgam can be collected from the drum and plates without stopping the machine, and any live quicksilver that passes will be caught in syphons. The tailings are carried off with the water. The machine when attached to the flume will be driven by the waste water; it sifts the fine sands from the coarse gravel, and amalgamates it as above.

The specific points claimed by Prof. Manes and Sons in their patent are—

1.—The saving of almost all the mineral passing through the machine.

2.—The loss being less than 10 per cent.

3.—The entire absence of loss of the amalgamated material, thereby saving all the mercury, which, with the processes now in use, there is a large loss both of mercury and the precious metal.

4.—The small cost per ton at which the ore can be treated.

By the addition of the powerful current of electricity that passes off the revolving brushes, the most minute particles of gold will be caught and retained, which in the ordinary flume and stamps passes off with the water; this often amounts to a large percentage.

The inventors state that if English stock companies will give their assistance to work the black sands of Oregon and California by paying for the building of the machines, they will take a share of the gold for their services, or they will send their machines to any part of the world, or will sell patent rights to those desiring any of their patent machines or revolving furnaces for roasting or smelting ores, ball pulverisers, &c.

Prof. James Manes and Sons are agents for the Morey and Sparey Ball Pulveriser, that crushes and pulverises at the same time, and does as much work as eight stamps in a day, crushing either wet or dry.

PRINCIPAL OFFICE OF

Prof. MANES and SONS,

No. 372, Glanarm Street, Denver, Colorado, U.S.A.

All our machines and furnaces are made by the Colorado Iron Company of Denver, Colorado, the most extensive mining machine works in America.

W. F. STANLEY

MATHEMATICAL INSTRUMENT MANUFACTURER TO H.M. GOVERNMENT, COUNCIL OF INDIA, SCIENCE AND ART DEPARTMENT, ADMIRALTY, &c.

MATHEMATICAL, DRAWING and SURVEYING INSTRUMENTS of every description, of the highest quality and finish, at the most moderate prices.

Price List post free.

ENGINE DIVIDER TO THE TRADE.

ADDRESS—GREAT TURNSTILE, HOLBORN, LONDON, W.C.

FROISETH'S NEW AND REVISED MAP FOR 1875,—Size 40 by 56 inches, scale 8 miles to the inch. Handsomely engraved, coloured in counties, showing the Towns, Settlements, Rivers, Lakes, Railroads Mining Districts, &c., throughout the Territory, and all the Government Survey to date. Mounted on cloth, £2; half-mounted, £1 12s.; pocket form, £1.

Also, GENERAL MINING MAP OF UTAH, showing twenty-eight of the principal Mining Districts adjacent to Salt Lake City, and location of the most prominent mines. Price, pocket form, 8s.

Also, NEW MAP OF LITTLE AND BIG COTTONWOOD MINING DISTRICTS showing the location of over Four Hundred Mines and Tunnel Sites, together with the Mines Surveyed for United States Patent. Price, sheets, 8s.; pocket form, 8s.

For sale, and supplied by—

TRUBNER and Co., 57 and 59 Ludgate Hill, London.

B. A. M. FROISETH, Salt Lake City, Utah, U.S.

VICTORIA GOLD COMPANY
(LIMITED).

CAPITAL £200,000, IN SHARES OF £1 EACH, FULLY PAID, NO FURTHER LIABILITY.

This extraordinary gold mine has been reported upon by many experts, and all describe it as one exceedingly rich.

Captain Penberthy, late of El Callao Mine, says that if the outcrop quartz averages only 1 oz. to the ton there is a great fortune in Victoria, because there is such a vast quantity of it.

J. A. Skertchley, Esq., F.R.G.S., has just examined the mine. The following is his abridged report:—

TO THE CHAIRMAN AND DIRECTORS OF THE VICTORIA GOLD COMPANY (LIMITED).

The Victoria property may be briefly described as going across two quebradas, which cut deeply into the sides of the mountains. In fact, Victoria may be said to form a very strong link in the chain of rich mining lands leading on southwards to the true gold regions of the central mountain range of Guayana, where I have every reason to believe the real "El Dorado" will be found. The farther south we go the richer do the auriferous deposits become, and at Victoria we have arrived at one of the southernmost localities hitherto discovered, or that part of the northern shores of the golden sea as yet known to us.

There are thousands of tons of quartz all full of gold lying scattered through this district, almost, we may say, at the surface. Indeed, 100,000 tons of quartz, which will surely mill out some 2 or 3 ozs. of gold per ton, can be literally picked out of the hill sides and tumbled into the trucks, which will carry it to the mill.

Some of the quartz in the veins is white and sugary in its character, with streaks of darker mineral running through it. Other quartz is of a dark blue colour, in some cases almost black. The gold is disseminated throughout the quartz, and minute particles in many, if not most cases, scarcely visible, except to a practical eye, until wetted. I have not seen any large masses of gold in the quartz, but I have seen specimens wherein the gold was scattered broadcast like dust all through the stone.

Many tons of this rock could be picked out which would mill out 100 ozs. to the ton. I was greatly astonished at the richness of some specimens I picked up at random off the heap.

In short, at Victoria you have undoubtedly one of the very richest gold mines in the world. No time should be lost in erecting a large plant as the quantity of rich ore which can be got at by quarrying, and no below-water level workings will be necessary for many years to come, even with a 50-stamp mill running day and night. Having thus so rich a supply of free milling quartz to rely upon, under judicious management and with adequate capital to erect works upon a scale of magnitude commensurate with the mineral wealth of the place, I see no reason why Victoria should not attain pre-eminence as a dividend-paying mine.

There is no mine in the country at present opened up possessing such elements of success.

I met your colleague, Mr. R. Larchin, on his way up to the mine, and feel assured that he, like myself, will be most agreeably surprised at the richness of the ores and their accessibility, and he will certainly confirm my opinion that Victoria will shortly take rank as one of the finest mining properties in the world, and I see no reason why provided capital is forthcoming for the erection of a suitable mill, a large dividend should not be paid within 2 months.

The expenses of working Victoria will be considerably less than those of any mine in the vicinity, as the cost of winning the ore is reduced to a minimum, and all expensive pumping will be unnecessary for many years. Your future depends entirely upon the management. Your mine is undoubtedly fabulously rich, and when it becomes better known and has been visited by competent persons the wonder will be why it lay so long unworked, and why, once opened out, capital did not at once flow in to develope what will undoubtedly prove one of the richest mines of the present century.

I am gentlemen, your obedient servant,
London, May 16th, 1884. J. A. SKERTCHLEY.

Full particulars of this wonderful property and report of Mr. Skertchley will be forwarded post free on application to the secretary of the company, Devonshire-chambers, Bishopsgate-street, London, E.C., or to Messrs. S. Powell and Co., Gracechurch-buildings, London, E.C.

Early applications should be made for shares.

Original Correspondence.

BRITISH ENTERPRISE IN COLOMBIA.

SIR,—It is with some degree of pleasure that I noticed the letter of "T. T. T." in the *Mining Journal* of May 10 in reference to the Organos Mine. A week or so since I returned to England, having paid a visit amongst other places to the locality of the Organos, and I can fully endorse the good opinion which "T. T. T." has of the Organos, though I am astonished to find the apathy that exists both with the shareholders and the public in reference to the great value of the Organos sett. Here you find a property most conveniently situated for great and quick returns, and well equipped with all the necessary machinery and appliances to work on a large scale. One part of the mine, I allude to the Socoros, will be capable of supplying the stamps, after the completion of the tramway now in progress, and likely to be finished in about two months, with quartz in sufficient quantity to realise or return mineral ore of enormous value, and so at once give to the shareholders very large dividends upon their outlay.

Moreover, I find the district in which the Organos is situated to be one of a rich quartz-bearing nature, and the facilities for quick returns are good, so that "T. T. T." has in no way given an exaggerated report of the mine, or praised it more than it deserves. I hope the shareholders will still persevere in their endeavours to open out the mine which I feel certain is deserving immediate attention, and I have no doubt the result will be a grand success. B. E.

Swansea, May 21.

ENGLISH AND FOREIGN MINING.

SIR,—I am afraid that for some time to come English mining will continue to be depressed. As foreign countries can now supply us with such cheap articles as corn, what prospects have our English mines, from which all the richer ores have been extracted by our forefathers, of competing with the richer mineral lodes now opened up by the construction of railways in foreign countries.

We have seen how the price of lead has been knocked down, and how our exportation of lead to the United States of America has been completely destroyed by the rich American mines of the Western States producing lead as a refuse article, and glutting the markets with it. We have seen how the Richmond Company has had thousands of tons of lead piled up, which were absolutely not worth the cost of carriage to New York. Much of this was the result of the extension of the Central Union and Southern Pacific and other railways to the Western States. Now, we have another competitor—Mexico, admittedly the richest mineral state in the world. What chance have our English mines of competing with these extraordinarily rich mines of that country? What must their ores consist of when it appears from undoubted authority that they were so rich as to be worked with men hauling the water, refuse, and ores on their backs? The columns of the *Mining Journal* have shown the extraordinary riches of Mexican mines, and now that they are being thrown open to the world they become a matter of serious import to England. What effect will it have upon our industries?

It is a serious matter for our industrial population. It may not matter much to capitalists, who will invest their money in Mexican mines, and share in large profits, but it is of importance to the working miner in England, who earns his living by the sweat of his brow. He has long since felt what the farmer has now began to feel—the competition of foreign produce brought over here cheaply by steam; but I am sorry to say I am afraid he will feel it still more, and in a short time mining for metals will almost be a lost industry in England. It has been a puzzle to a great many how it was that there was such a general consensus of opinion that the Americans could turn out cheaper and better tools than we could in England, although labour was so much more expensive there. The fact is capable of explanation. It is simply that they have such immense quantities of the purest description of iron throughout their extensive country that our quality iron cannot compete with it. They make their tools of iron as good as Swedish, and these being articles which can be turned out by the thousand the difference in the expense of labour does not effect an adequate compensation.

Our mechanics still remain prominent, and will I venture to say always remain so, for all articles where care and judgment are required. It is a national characteristic. OBSERVER.

MANNER, MATTER, AND MOTIVE OF MINING LITERATURE.

SIR,—In the Supplement to the *Mining Journal* of April 12 Mr. R. Symons has taken exception to my style of diction, but says nothing of the subject matter thereof, or the motives from which it was dictated. . . . My style, though occasionally stilted, is sprightly; his is tame, even to dulness. . . . I write from a conviction of the truthfulness and importance of the facts and views I am impressed with and entertain. I presume Mr. Symons does the same, as he publicly professed to be a conscientious man as well as a land surveyor. But he is not a miner, and has made a mistake is essaying to be one. In my writings sincerity and truthfulness have been my guide and incentive. . . .

Whatever may be said as to whether I lucidly express my ideas or not they evidently underlie my writings; and I do not write of that of which I have no personal knowledge—principally from such groundwork and from disinterested motives. Mr. Symons may, and no doubt does, mean well; but not being skilled in the art of mining he is easily flattered, and led into error. His remarks in the letter referred to above *a propos* of "disappointments" accruing from mining enterprises, instancing amongst others the Hony and Trelawny disaster, sufficiently confirm the view I have expressed. After briefly noticing the Hony allurement he confidently and feelingly asks—"Who would have expected such a result?" If that gentleman had known the Trelawny Mine and the prospects of the Hony ground, as indicated and inferrible therefrom, as well as I did he would not have asked such a question or affected surprise at the result. It may be surmised, and even expressed, that probably I have become wise after the event; but such is not the case. Were it so prudence would restrain me from hazarding an opinion of the merits at this distance of time and space from the theatre of action. I think I left an impression of my views as to the result of reworking that mine with the Hony ground added on the minds of certain shareholders at Tavistock a few days after the first—inauguratory—meeting of the company's representatives and their friends at the mine in December, 1880, a week or two before I left England to fulfil an engagement in this country.

I am well aware that the subjects upon which I write are not such as conduce to my prestige or popularity—to say nothing of the objectionable exclusiveness of my style and diction, which, if I am to believe Mr. Symons, most certainly stultify my efforts, and defeat the cherished purpose of my ambition. Of course, I have read the objectionable extract from my No. X. letter in the light of the criticism to which it was subjected, and am free to confess that I might have expressed the same idea in a more trite and antiquated prosaic form; but, in my opinion, it would then have been less forcible and convincing than it now is. The only fault I have to find with it at present is that as reproduced it is not a copy *verbatim* of the original. I have only to add that Mr. Symons and myself appear to be distinct types of different modes of thought and manner of expression. He undoubtedly esteems his own most highly, whilst I, on the other hand, do not envy him his preference. ROBT. KNAPP.

Ione, Nye County, Nevada, May 1.

ROYAL SCHOOL OF SCIENCE DEGREES.

SIR,—I was much pleased to see the suggestion in last week's Journal that the Royal School of Science should be empowered to grant degrees in science, or at least a degree in science; and I quite agree with the suggestion that it should be some title different from any given at any university. I suppose that you mean that the Royal School of Science should have a Royal Charter, and that its degree should enjoy the academic precedence you talk about. I am not sorry to say that I know very little about universities and the way in which the tests are applied, because I know enough to comprehend that the high cost of attending universities shuts them up to the middle and working classes: and if there are to be only university science degrees I believe that many of the channels in which a working man can raise himself in the social scale will be shut up too, and the higher places of managers, superintendents, and what not will be filled up by the sons, perhaps younger sons, of poor gentlemen who, just as they do at present, will have too much science and too little practice. I like the idea of a Royal School of Science degree in science, and hope you will hammer away at the subject until you get it, and that is not all; you must let it be got by working men while part of their time is occupied at work, and at a low price, too, as, if the degree costs too much we cannot get it, no matter how hard we study.—*St. Austell, May* 20. C. B.

ROYAL SCHOOL OF SCIENCE DEGREES.

SIR,—The question is whether the Graduate of Science degree of the Royal School of Science would be looked upon by employers as good for anything. I doubt it. That is to say, nothing will be thought of it until some good men have got the title. The "A.R.S.M." was thought nothing of until such men as Blanford, Baker, Snelus, and men of that stamp used it. If you can get Huxley, Tyndall, Warington Smyth, and all the A.R.S.M's to become G.Sc. you might do something, but not otherwise.—*Sheffield, May* 19. PRACTICAL.

THE PROPPING AND TIMBERING IN MINES.

SIR,—In the present state of mining generally economy becomes a matter of necessity in working operations and in the cost of material, and in no department is a saving of importance more likely to be effected than in the efficient propping and timbering of the roof and walls of the excavated parts and main passages in mines. In timbering it may be stated that a knowledge of the fracture of the rock forming the floor and roof of a mine should show to the experienced man where props were necessary and where they were not. It is, therefore, not assuming too much in saying that, with such knowledge and by improved means of timbering or supporting the working places and roads in mines, a great saving in the cost of timber, and of labour as well, may be effected. As to the description of timber to be used, a great deal depends upon how it is to be employed, the nature of the strata, and, in some instances, on the wood that is grown nearest to the mines. Cost of carriage is, of course, an element that should always be taken into consideration. As a rule, oak and larch are considered to be most durable for nearly all purposes, and are the best adapted for main roads and air-ways, and, indeed, at any place where the wood is likely to be kept standing in position for any length of time. Locust, red pine, and white oak are considered durable, and will remain sound for a long time underground. In working places, where the props are frequently left and altogether lost, a cheaper kind of timber may be advantageously used—such as Scotch fir, alder, beech, &c.

But it should be always borne in mind that there is no economy in limiting the supply of timber for all underground purposes. The quantity required will depend upon the state of the roof and the walls that have to be supported, and on the liability there may be of the heaving up of the floor, or "creeping," as the miners term it. In some cases stone or brick arching, especially in the main roads leading to the shaft, will be found the most economical in the long run, despite the increased cost in the first instance. In some coal mines, when the seam has been 4 or 5 ft. in thickness, and with a roof consisting of tough shale, and worked in longwall, cast-iron props have been used, but they have been abandoned at most places where tried owing to the difficulty of drawing them as the faces advances. One of the best systems adopted of working long faces is that of having pieces of timber from 2 to 3 ft. long placed across each other by twos, and set up in double rows at convenient distances apart. The main strength of this description of support lies in the crushing strain being transverse to the fibres of the wood. By the use of these chocks, as they are called by the miners, a marked economy is obtained, and the roof is more securely supported than when single props only are used, whilst they have the still greater advantage that in most instances they can be recovered from the "goaf." But a great deal of the useful effect of timber is lost by certain systems of propping, for unless the props are nearly in a line with the direction of the pressure some of the power of resistance is thrown away. In main roads the ordinary mode of timbering is by means of props and head-pieces, single head-pieces being used where it is not necessary to have pieces or planks of wood passing from one side of a passage to another. Where permanent support is necessary cast metal pipes with oak planks have been found most effective, especially where it is required to have very strong walling.

Where the vein or seam to be worked is very highly inclined, in some cases it will be found of advantage to prepare long frames of wood and then send them into the mine, where they can be cut into the required lengths and fitted up by the men. The frames can be fixed by wedging on each side of the ways, or cross pieces may be passed over the top from one frame to the other. It should also be a rule that in all cases where broken or decayed timber required replacing by what was whole and sound a selection of the strongest and most durable should be made, and in holing, where there are slips or backs in the seam, a sufficient number of sprags or props should always be in readiness until the whole process was completed. As to the timbers most suitable for ordinary mining purposes, an eminent mining engineer states that oak or larch is in every way suitable for horse-roads, and in the working places the men should be directed to place the timber in rows after the face, and draw the back-rows as the face advances, and by so doing there would be a great saving of the waste which is found in many of our mining districts. It is for the purpose of pointing out how such waste can be prevented that we have drawn attention to the most economical system of timbering in mines, and combining efficiency with safety.

Barnsley, May 20. J. R.

SPONTANEOUSLY EXPLOSIVE LEAD MINES.

SIR,—Can some reader of the *Mining Journal* afford any explanation of the annexed curious description of what may be termed spontaneously explosive lead mines in Derbyshire? I have not seen the phenomenon described or mentioned elsewhere, so it may only be an idle miner's tale, but as the account appears to be authenticated by the overseer of one of the mines, and has been accepted as a *bona fide* statement by Mr. Whitehurst, a Fellow of the Royal Society, perhaps some correspondent may be able to afford further information upon the question—Did the explosions actually occur at that time? Are the mines named still in existence, and do similar explosions occur at the present time? Do similar phenomenon happen elsewhere? Has any explanation of the occurrences been attempted?

Some account of an extraordinary phenomenon which has frequently happened in Haycliff and Ladywash Mines, at Eyam, and in Oden, Mine, at Castleton, the former are thus circumstanced:—

1.—The minerals are contained in the fissures of the Derbyshire limestone, covered by a stratum of shale and grit, which retain their full thickness of 60 fathoms each.

2.—The minerals contained in the above mines are blended together so as to produce the appearance of white Italian marble clouded with black, and are so extremely hard and compact as to require blasting with gunpowder to separate them from the general mass.

3.—Those in the Ladywash vein are divided in two equal parts parallel to the sides of the fissure. They may be compared to two slabs of marble whose polished surfaces are absolutely in contact with each other without the least degree of cohesion.

4.—These naturally polished surfaces are not truly flat, but in some degree waved, as if formed by a carpenter's plane, consisting of various members.

5.—The two surfaces are generally coloured with lead ore, thinly laid on, as if only rubbed over with black lead, though sometimes much thicker.

6.—The vein in Haycliff Mine contains two of the above seams; and, therefore, may be compared to three slabs of marble—the middle one polished on both sides, and in contact with the other two.

Thus are the above veins circumstanced. Now what is yet more remarkable is this—If a sharp pointed pick is drawn down the vein with a small degree of force the minerals begin to crackle, as sulphur excited to become electrical by rubbing. After this, in the space of two or three minutes, the solid mass of mineral explodes with much violence, and the fragments fly out, as if blasted with gunpowder. These effects have frequently happened, by which many workmen have been much wounded but none killed, both in the Eyam Mines and in that called Oden, at Castleton.

In the year 1738 a prodigious explosion happened in the mine called Haycliff. The quantity of 200 barrels of the above minerals were blown out at one blast; each barrel I presume contained no less than 3 or 4 cwts. At the same time a man was blown 12 fms. perpendicular, and lodged upon a floor or bunding, as the miners call it, in one of the shafts. When the above explosion happened the barrel or tub in which the minerals, &c., are raised to the surface happened to hang over the engine-shaft, which is nearly 7 ft. diameter and 448 yards distant from the forefield, or part where the explosion happened. This barrel though of considerable weight was lifted up in the hook on which it was suspended, and the people on the surface felt the ground shake, as by an earthquake.

Such are the effects which have frequently been produced in all the above mines, but from what cause they proceed I have not yet been able to discover, nor even the least traces towards it. The substance having been analysed is found to consist of fluor and the ore of lead, but the cause of explosion still remains equally mysterious, though some attempts have been made to obtain a knowledge of this curious phenomenon. These curious observations I received from Mr. Mettam, of Eyam, overseer of the mines, who also addressed the following account of them to Mr. George Tissington, of Winster, principal agent of the works:—

Eyam, July 2, 1768.—SIR,—I send you by the bearer two specimens of our slickensides containing all the variety of minerals where the explosions happen, they fly out in such slappits, smooth on one side. The explosions are sometimes heard to the surface, and felt like an earthquake; they frequently blow out all the candles in the mine, and split the stempies into splinters as small as the twigs of a birch beesom to the distance of 30 or 40 yards from the forefield; others are broke, and some of them become too short and drop out. The smooth sides lie face to face, and have the appearance of being shot with a plane consisting of various members. There is generally two of these divisions in our forefield at Haycliff about 8 in. or 10 in. asunder, and a seam of white kibble in the middle of that space ½ in. thick, which the miners rake down a sharp-pointed pick until the crackling ceaseth; then they run away knowing that the explosion will follow in a minute or two. Sometimes a noise is heard like the beating of a church clock, after which the greatest explosions happen.—WILLIAM METTAM.

From "An Enquiry into the Original State and Formation of the Earth, &c.," by John Whitehurst, F.R.S. Second edition: 1786, page 218 and following. M. WALTON BROWN.

Newcastle-upon-Tyne, May 21.

INVESTORS AND SHAREDEALERS.

SIR,—Occasionally reports appear in the columns of the *Mining Journal* from investors complaining of the unnecessary trouble frequently experienced in the delivery of share certificates by brokers and sharedealers. As I happen to be a victim at present to this complaint, I trust it may not be out of place to ask publicity to the following remarks bearing on the subject, which, if not interesting, may serve as a hint to those similarly situated away from the regions of the great Metropolis. Having no desire to make public the name of the gentleman concerned, I will content myself by remarking that he is well known on the London mining market. The facts with which I wish to acquaint your readers are these:—On Dec. 1 last I purchased from this gentleman 10 East Wheal Rose and 10 Old Shepherds shares, remitting the amount for the same per return post on receipt of the contract, which was duly acknowledged with an intimation that the transfers would follow in due course. Time, however, rolled on without any tidings of these documents coming to hand; and as it was approaching the end of January I began to feel somewhat uncertain as to the safety of my bargain. About this time it occurred to me that business might be facilitated if we could arrive at a compromise, so with this view I addressed the gentleman in question on Jan. 25, proposing to accept 10 South Caradon shares in exchange for those already purchased, to which he replied that it was out of his hands to do so. But to my great surprise, however, on Feb. 2 I received from him a communication cancelling the purchase of East Wheal Rose and Old Shepherds, and selling me instead

10 South Caradon shares, mentioning by way of obligement that it was not usual to cancel contracts, but that I would be favoured in this instance.

At first sight I was unable to account for this new departure; but by the same day's post I became possessed of certain information which might be termed the sequel to this act of generosity. It may be remembered that between the dates of the last two letters referred to—Jan. 25 and Feb. 1—the meeting of East Wheal Rose and Old Shepherds Companies took place, following which a rapid advance was marked in the share quotation of each. Having regard to these facts it will, therefore, be needless to remark that I respectfully but firmly declined the new contract, which was evidently sprung for a different motive than with the view to making a concession in my favour. To this I received a reply repeating the old story that the transfers would be sent me in due course.

Since then I have written repeatedly asking for the certificates to be forwarded; and at last, when completely sick of promises, I was determined to take the only course left for my protection. With this view I addressed the gentleman in question again, intimating that in the event of the certificates referred to not being forthcoming immediately I should at once institute legal proceedings against him. This had the desired effect so far as East Wheal Rose was concerned, and as for Old Shepherds certificate I have no idea when it is likely to turn up, although I signed the transfer on April 16; and from enquiry made at the office of the company the secretary informs me that it has never reached there for registration. It would certainly be interesting to know to what neighbourhood it has flown.

It will, therefore, be observed that a period of nearly six months has been wasted in this transaction, which under ordinary circumstances should not occupy a month at the most. From these facts some idea will be gathered of the great inconvenience caused by this system of conducting business, which, in my opinion, cannot be too strongly condemned. Investors would, therefore, do well before parting with their cash to ascertain the standing of those employed to execute their orders. I fear I have trespassed beyond the limits of your valuable space, and must, therefore, conclude by thanking you for making public a subject so prejudicial to the interests of—

FAIR PLAY.

P.S.—Enclosed is my name and address, also that of the person to whom the above remarks apply.

MINING INSTRUCTION IN UNIVERSITIES.

SIR,—As an old reader of the *Mining Journal* and a graduate of the University of Louvain I ask a small portion of your space for a very interesting account, given in the Globe of this evening, of the Jubilee fetes which my Alma Mater has just been celebrating. I feel myself the more entitled to ask this favour, since many of the most celebrated Belgian Mining Engineers have received their education at Louvain as well as some English ones, and I believe there is no school wherein sound scientific knowledge, such as can afterwards be practically applied, is more readily and economically obtainable. Your contemporary states that the fetes were brought to a close by the third appearance of the grand Historical Cortège—a splendid pageant, consisting of cars and groups on foot and on horseback, representing with scrupulous fidelity as regards costume, various events connected with the history of the University. In several cases the parts were filled by members of the old aristocratic families, descendants of the personages represented, and in the car of the founders of the University the allegorical Maid of Louvain had in her hand the original MS. of the first statutes of the institution. This car was followed by the Rector Magnificus and the professors of the old University in their robes, John of Westphalia and his printing press, the Nations of the University, Charles V. as a boy, surrounded by his court in gorgeous attire, Albert and Isabella, Prof. Rega imploring the clemency of Marshal de Saxe when Louvain was threatened with bombardment, a Primus of 1778 in a gilt coach drawn by four horses, lent by the Duchess d'Aremberg, and, lastly, the illustrious men of the University, Adrian VI., Vesalius, Justus Lipsius, Mercator, &c., among whom one is surprised to see Erasmus, the man who laid the egg which Luther hatched. Nor is it easy to understand why the young Count de Buren should figure in the cortège, surrounded by his tutors and companions, unless for the sake of adding one of the most picturesque of the groups. The Count de Buren, eldest son of William of Orange, did for a short time study at the University, but at the age of 13 he was kidnapped by order of Phillip II., separated from his father and family, and sent to Spain, where he was educated as a Spaniard. When the professors of Louvain waited upon Vargas, the President of the Council of Blood, to protest against the arrest, they received the memorable answer, "Non curamos vestros privilegios." The cortége concluded with two modern cars, Mining and Agriculture, the former attended by miners from the Borinage, the latter drawn by eight yoke of splendid oxen, and most tastefully designed; and, lastly, the apotheosis of the University.

The religious part of the celebration consisted of a solemn Te Deum, in the fine old church of St. Peter, and a Pontifical Mass the next day. The Archbishop of Malines and all the Bishops were present, and a large assemblage of the clergy and religious orders, and of representatives of the principal aristocratic families, mostly former students at Louvain. At the Séance Académique honorary degrees were conferred on a number of distinguished personages—the Emperor of Brazil, the Archduke Rudolf, Count de Lesseps, M. Pasteur; one Englishman, Mr. St. George Mivart; Mgr. Van Weddingem, chaplain to the Court; and other dignitaries of the Church, and a long list of professors, Belgian and foreign. Two banquets afforded opportunity for toasts and speeches, chiefly relating to the past, present, and future of the University, and expressive of the veneration and affectionate regard in which the new Archbishop is held. At one of these banquets some confusion was caused by the correspondent of the Paris Univers, who attempted to protest against the King's name being coupled with that of the Pope. He was immediately silenced by an indignant rebuke from Mgr. Cartuyvels, the Vice-Rector of the University, who was loudly cheered as he gave expression to the loyal feelings of the assembly. The University was founded in 1425, by John IV., Duke of Brabant, who obtained a bull from Pope Martin V., which, singularly enough, authorised instruction in all the sciences except theology. This branch was, however, added five years after. The University of Louvain soon became celebrated, obtained important privileges, and amassed immense wealth. In the 17th century the number of students exceeded 4000; at one time there were as many as 8000. It comprised 40 colleges, including an English college of friar-preachers, founded by Cardinal Philip Howard, and an Irish seminary; also two convents for the Irish, one of Recollects and one of Dominicans, where divinity and the Mathesis were taught.—*Islington, May* 20. P. O'B.

BIRMINGHAM AND HARROWBARROW MINING COMPANY.

SIR,—In December, 1882, I received a prospectus of this company giving the usual glowing accounts of the value of the speculation, along with several very strong testimonials as to the value of the property, and was thus induced to make an application for shares, which of course were duly alotted; but upon making enquiry a short time afterwards as to the number of shares subscribed for I was informed by the secretary that only about 3000 out of 25,000 shares had been taken up by the public, and from an enquiry just made I hear the total number of shares that have been issued are 3474, including 5000 shares taken as part payment by the liquidator of the company from whom the property was taken over, which leaves the exact number of shares *bona fide* subscribed for 3474 at 10s. each, or a sum of 1737*l.*, from which all law charges, cost of the formation of the company (estimated in a letter from the office as 200*l.*), together with office rent, salaries, directors' fees for the last 18 months, have to be deducted; but I have made my estimate upon the supposition that the shares are fully paid, which is by no means the case, 2s. 6d. being, I believe, all that is yet paid, as last October our board issued a call notice of 5s. per share, which was not in accordance with the prospectus, and consequently on the 14th of last month a circular was issued to the shareholders re-calling the same, and making a call of 2s. 6d.

I want to know in the face of such a state of affairs what my co-shareholders intend doing, as by the terms of the original prospectus I see we have to pay in cash to the vendors the sum of 2200*l.* I am at a loss to know what our directors can think of doing even when they have enforced the full payment from all we poor unfortunates. I am told the general meeting is to be held upon the mine early in June, though why we should be called upon to spend more money and time by having to take so long a journey when nothing is being done on the property is a thing that is past my limited comprehension, but I do hope all who can will make a point of attending the meeting if only to protest against the folly of ever allotting shares in a concern under such adverse circumstances as I have shown.

I may mention that our board of five directors hold between them a total of under 200 shares, or a liability of (say) 20*l.* each, taking the average, which does not look as though they possessed so high an opinion of the property as they would have us believe from the prospectus. This sort of thing is what disgusts investors with mining and interferes with the mining industry of the country generally, and yet we are being told by all concerned in the industry that what is just now most wanted is more outside capital to put it in a good position. I would enquire how in the face of such examples as this (which is not by any means an isolated one) can we expect money to be forthcoming. As an amateur miner of a few years I have come to the conclusion that except in very rare and exceptionable cases mining profits are reserved for vendors, promoters, directors, and liquidators, and that the ordinary shareholder may fairly be looked upon as what I myself have been. W. S.

Harleeden, May 20.

WEST POLBREEN MINE COMPANY.

SIR,—Our attention has been directed by Mr. J. B. Reynolds to a letter under this head, signed James M'Meeken, in last week's *Mining Journal*, which is full of gross mis-statements and inaccuracies, reflecting seriously upon the character and conduct of Mr. Reynolds and the officers of the company (of whom Mr. Reynolds is not one) in relation to the company's business. Mr. M'Meeken is so well-known as a fouler of his own nests, and has gained by such work so unenviable a notoriety as to render any statements of his of small account with those who know him; but the publicity which is given to his false and libellous statements by the Journal may render it necessary for our clients to adopt legal measures for the vindication of their characters, and in order to afford Mr. M'Meeken the opportunity of publicly establishing or publicly retracting his accusations.

Before taking these steps, however, the whole matter will be submitted to the shareholders; and we will for the moment, therefore, content ourselves with protesting against the insertion of what our clients feel to be grossly libellous statements, worthy of a man of Mr. M'Meeken's character and antecedents, but wholly unworthy of your columns.—*London, May* 19. LEAROYD AND CO.

[For the information of readers, it may be stated that Messrs. Learoyd and Co. are solicitors practising in London, and that Mr. James M'Meeken is a chartered accountant practising in Glasgow. Both correspondents being, so far as the Editor's knowledge extends, equally respectable and worthy of credit, it may be assumed that their combined efforts will place the public in possession of the exact facts of the case.]

WEST POLBREEN MINE COMPANY.

SIR,—I am exceedingly surprised that you should have permitted the insertion of Mr. James M'Meeken's letter in last week's *Mining Journal* relative to the West Polbreen Mine Company, containing as it does so many disparaging reflections on the officials of the company without previously satisfying yourself as to the accuracy of the statements or insinuations made by the writer thereof.

For the present this is the only notice I intend to take of the matter beyond requesting that in future you will do me the kindness not to print my name for others in a similar manner.

FREDK. J. HARVEY.
(Late Secretary and present Auditor of the West Polbreen Mine Co.)

Walbrook, London, May 19.

THE PRICE OF LEAD.

SIR,—I am glad to see this matter taken up by "Justicia," who evidently takes a proper view of the present depression and the most likely way to improve matters. There are certainly numbers of men largely interested in lead mining who never gave it a thought that their assistance might be a good help. As I have mentioned when writing before, "Union is power," and for a few to give their time with a hope of doing any good would be simply useless without the help of a fair number of men representing large interests here and on the Continent. To carry out "Reciprocity's" view would not be wise. He would like to have lead never lower than 20*l.* per ton. I do not like extremes, and think the price of lead should vary from 15*l.* to 18*l.* per ton.

If we look at the question reasonably, and consider that at the present price some companies are declaring dividends of 5 to 10 per cent., it is obvious that such a price (20*l.*) is not necessary, and the market could never be reliable at such a price. I am fully aware that at the present prices some of the mines in this country are being worked at several pounds per ton loss. L. D. R.

Palace Club, May 22.

DAILY EXAMINATION OF COAL MINES—GOVERNMENT PROSECUTION.—Much interest is now taken in Nottinghamshire and Derbyshire in the Home Secretary's prosecution of the Shireoaks Colliery Company for non-compliance with the circular of Mr. Evans, Her Majesty's Inspector, requiring all roads and working places to be examined within two hours of being used as required by Sec. 51 of the Act when gas has been found within 12 months. The Coal-owners' Association, however, have resolved that the circular was opposed to the spirit of the Act, whereby a large discretion was most properly left to the individual managers, and that the notification was uncalled for; all reasonable precaution being already taken at the collieries represented to provide for the safety of the roads and working places. It is not stated whether inflammable gas is met with at the Shireoaks Colliery, but seeing that the coal worked there is the well-known Barnsley seam, one would think that gas must be met with in working it. It may, however, be stated that in most of our mining districts the mines are examined just before the men resume work in the morning or on the change of shifts where shifts are worked, and it is not quite clear where the hardship is in enforcing the rule, or where the circular is opposed to the spirit of the Act of Parliament. Reference to the hearing of the case will be found in another column.

THE TRADE OF NEW SOUTH WALES.—The Statistical Register for the year 1882 shows that the general total value of the imports for that year amounted to 21,281,130*l.*, and exports reached the sum of 16,716,961*l.*, showing an excess of imports over exports amounting to 4,564,169*l.* The value of the total trade of the colony for the year was 37,998,091*l.* Of the above-mentioned imports the United Kingdom sent to the value of 11,155,917*l.*; Victoria sent 2,770,245*l.* worth; from South Australia we received to the value of 1,017,685*l.*; from Queensland to the amount of 1,962,997*l.*; Tasmania contributed to the tune of 614,923*l.*; New Zealand, 737,204*l.*; Point de Galle, 1606*l.*; Hong Kong, 209,470*l.*; Mauritius, 211,366*l.*; Ceylon, 12,186*l.*; Singapore, 29,886*l.*; Fiji, 57,424*l.*; British Columbia, 67,781*l.*; India, 72,739*l.*; Burmah, 144,500*l.*; New Brunswick, 13,755*l.* The value of our imports from foreign countries was as follows:—France, 98,176*l.*; Germany, 180,951*l.*; Belgium, 39,951*l.*; Norway, 20,323*l.*; United States (from the ports of San Francisco, Portland, and New York), 886,171*l.*; China, 358,783*l.*; Java, 227,818*l.*; New Caledonia, 273,370*l.*; South Sea Islands, 49,185*l.*; Honolulu, 373*l.*; Japan, 150*l.*; Philippine Islands, 29,004*l.*; Manilla, 24,754*l.*; Sweden, 11,710*l.*; Italy, 15*l.* Of our exports, the United Kingdom took 7,309,691*l.*; Victoria, 3,781,421*l.*; South Australia, 1,085,194*l.*; Queensland, 2,052,388*l.*; Tasmania, 85,673*l.*; New Zealand, 454,853*l.*; Western Australia, 5980*l.*; Hong Kong, 178,114*l.*; Mauritius, 21,822*l.*; Calcutta, 191,005*l.*; Ceylon, 4398*l.*; Bassein, 1667*l.*; Bombay, 136,874*l.*; Nagapatam, 2299*l.*; Singapore, 11,525*l.*; Fiji, 170,658*l.*; British Columbia, 314*l.*; Burmah, 991*l.*; France, 9744*l.*; United States, 676,598*l.*; China, 28,958*l.*; Java, 24,045*l.*; New Caledonia, 228,280*l.*; South Sea Islands, 53,718*l.*; Honolulu, 83,722*l.*; Japan, 8495*l.*; Chili, 17,509*l.*; Manilla, 11,703*l.*; Venice, 1850*l.*; Buenos Ayres, 918*l.*; Antwerp, 21,659*l.*; Mexico, 866*l.*; Rotterdam, 20,898*l.*; Sumatra, 652*l.*; New Guinea, 679*l.*; Peru, 2592*l.*; Guam, 2295*l.*; Hamburg, 11,661*l.* The imports altogether showed 3,871,804*l.* in excess of the figures of the previous year, and exports showed an advance of 667,458*l.* The trade per head of estimated mean population was 47*l.* 13s. The import trade was 26*l.* 13s. 9d., and the export trade was 20*l.* 19s. 5d. per head of the population. Of the total export of the year, 13,208,459*l.* was the value of the produce and manufactures of the Colony. Wool, the produce of the Colony, was exported to the value of 7,433,091*l.*, of which Great Britain took to the value of 4,033,533*l.*

FOREIGN MINING AND METALLURGY.

The condition of the French Iron Trade is far from brilliant, and quotations show no tendency towards a recovery. The quotation for iron has just been carried in the Nord to 6*l.* 4s. per ton, showing an advance of 4s. per ton, but iron is still being sold at Paris at 6*l.* 4s. to 6*l.* 8s. per ton. The Northern of France Railway Company has let a contract for 50 tons of second-class rails to be supplied by the Denain Forges Company at 6*l.* per ton, as well as another contract for 100 tons of first-choice rails and 250 tons of second-choice rails to be supplied by the Northern and Eastern Forges Company at 6*l.* 2s. 6d. per ton. The Northern of France Railway Company has sold from 7000 to 10,000 tons of old rails to the Maubenge Blast Furnaces Company, and from 2500 tons to 4000 tons to M. Cesar Sirot, of Tritté, St. Leger, at 3*l.* 16s. 8d. per ton. The condition of the German iron trade has remained relatively good. The demand for pig has been satisfactory, and there has also been a pretty good enquiry for iron, although not sufficient to involve any improvement in quotations. Plates have been in pretty good request, and the steelworks, as well as the mechanical construction workshops, have also work assured in advance. The Phœnix Works, at Laar, have carried off a small contract for axles at Strasburg; the contract price in this affair was 15*l.* 17s. per ton. The Gate Hoffnung Company has taken 218 tons of steel rails at Elberfeld at 6*l.* 9s. per ton.

There has been no improvement in the Belgian Iron Trade. Employment is failing more and more, and if some works are still well occupied there are many other small establishments which are endeavouring to obtain orders at almost any price. This state of things exerts, of course, an adverse influence upon the better employed works. English pig has made 2*l.* 3s. 9d. per ton. In the Luxembourg the quotation for pig ranges from 1*l.* 15s. 2d. to 1*l.* 16s. per ton. No. 1 iron has made 4*l.* 12s.; ditto No. 2, 4*l.* 18s.; and ditto No. 3, 5*l.* 4s. per ton. Girders have been quoted at from 4*l.* 16s. to 5*l.* per ton. No. 2 plates have made 6*l.* 8s. per ton; No. 3 ditto, 7*l.* 4s. per ton, and plates of commerce, 8*l.* 16s. per ton. It appears that in 1883 the Great Central Belgian Railway Company used 6603 tons of rails in the maintenance of its permanent way. Of these rails 3454 tons were steel rails, 698 tons were new iron rails, and the balance of 2451 tons were steel and iron rails re-employed. The average price of the steel rails used last year in the renewal of the Great Central Belgian system was 5*l.* 10s. 9d. per ton, and that of the iron rails 5*l.* 1s. 3d. per ton. In 1882 the quantity of rails used for renewal purposes was 5070 tons. Of these rails 1876 tons were steel rails, 2169 tons were iron rails, and the balance of 1025 tons were steel and iron rails re-employed. The average price of the steel rails used in 1882 was 5*l.* 15s. 7d. per ton, and that of the iron rails 4*l.* 19s. 2d. per ton. Of 3667 tons of rails taken out of the system last year, and condemned as past service, 3610 tons were iron rails, and only 57 tons steel rails. The Maubenge Blast-Furnaces Company has announced a dividend of 1*l.* 4s. per share for 1883.

Transactions in the Belgian Coal Trade have been a good deal restricted, this being the season of the year when the requirements of consumers are reduced to a minimum. Under these circumstances there is little ground for astonishment or complaint if the current production is disposed of with some difficulty, and if stocks are for the moment accumulating. The description of coal which is the most neglected just now is coking coal. Prices have not experienced much change during the last few days. A similiar report may be made with respect to German coal quotations; gas coal has shown firmness upon the German markets, but coal for metallurgical purposes has been rather tending downwards. The German coal markets have generally maintained a firm tone, although prices have not shown any upward tendency at present. A syndicate of coalowners is still spoken of as in course of formation, but the difficulties which are experienced in bringing it into operation show German colliery proprietors are reluctant to admit the principle of reduction in their production. The imports of coal into Germany in the first quarter of this year amounted to 314,571 tons, as compared with 289,631 tons in the corresponding period of 1883, showing an increase of 24,940 tons this year. The exports of coal from Germany in the first quarter of this year were 2,134,847 tons, as compared with 2,023,967 tons in the corresponding period of 1883, showing an increase of 110,880 tons this year. In the exports of coal from Germany in the first quarter of this year Russia figured for 87,415 tons, Austria and Hungary for 575,776 tons, Switzerland for 143,287 tons, France for 332,187 tons, Belgium for 202,547 tons, and Holland for 615,924 tons.

REPORT FROM CORNWALL.

May 22.—So far as the general outlook is concerned, we can only repeat what we said last week, for there has been no material change either in position or prospects. The natural strength of the present aspect of affairs has, indeed, been shown by the manner in which the selling prices of shares in good mines has been maintained in the face of the disturbing influences caused by the American financial complications.

We attach very little importance to the drop in the standards. It is no more than under the circumstances was to have been expected, and in the absence of anything approaching a general speculative tendency can have very little influence.

East Pool has had a very satisfactory account. After getting rid of an old legacy of uncharged costs, and having paid a dividend of 18s., a balance was left of 1378*l.*, which brings the reserve fund now up to 2751*l.* Apart from the financial status of the mine, the most gratifying feature in the report is the improvement in the quality of the produce—80 lbs. to the ton instead of 79 lbs. There seem to be the same indications here that have been so remarkable at Dolcoath, of the increasing richness of the lodes in depth, though as compared with its neighbour, East Pool, is as yet quite shallow; and though the valuations given by Captain Bishop are evidently all studiously within the mark.

One of the most encouraging incidents of the meeting was the announcement that the Cornish Dynamite Company had arranged to supply 5 tons of dynamite at 79*l.* 17s. 6d. per ton, which is by far the lowest price that has yet been charged for this explosive, and is somewhat under two-thirds of the cost of the dynamite used by East Pool in the past quarter. Economies like these will tell forcibly in our favour, and it is quite certain that we are as yet by no means at the lowest point.

Annexed is the official notice which has been addressed by Capt. Josiah Thomas to the rating authorities in respect of the rating of the Dolcoath "fine:"—

"Whereas the shareholders or adventurers of Dolcoath Mine, or the purser, secretary, or chief agent thereof, hereafter called the appellants, are rated as occupiers of a certain mine, land, tenements, and hereditaments in the parish of Camborne, in a certain rate or assessment purporting to be for the relief of the poor of the parish of Camborne, made on or about April 22, 1884, at 1s. in 1*l.*; and whereas the appellants had given to the Assessment Committee of the Redruth Union notice of objection against the valuated list on which the said state has been made, and have failed to obtain such relief in the matter or assessment as they deem just; take notice that the appellants intend at the next general quarter sessions of the peace, to be holden in and for the county of Cornwall, at Bodmin, to appeal against the said rate or assessment, and that the following

grounds of appeal, or some of them, will be relied upon by the appellants at the hearing of the said appeal in support of the appeal:—1. That the appellants are over-assessed and rented in respect of the gross and rateable annual values of the said mine.—2. That the principle upon which the amount, purporting to be gross and rateable annual values of the said mine has been arrived at is incorrect, as the amount has been based upon and includes a payment of 25,000*l.* by the appellants to the lord, as if the same were a payment of dues.—3. That the property has not been assessed upon the principle laid down in the Rating Act, 1874—that is to say, at the annual amount of the dues at which the mine might be reasonably expected to let without fine, on a lease of the ordinary duration, according to the usage of the country, if the tenant undertook to pay all tenants' rates and taxes, and tithe rent charge, and also the repairs, insurance, and other expenses necessary to maintain the mine in a state to command such annual amount of dues.—4. That the said rate is objected to on the ground of unfairness and incorrectness, as compared with other mines in the parish of Camborne."

It will be seen that the important character of the points raised is very clearly set forth; and it is to be hoped that on the appeal they may be settled thoroughly once for all. We cannot afford to have the long-vexed question of mine rating re-opened upon side issues, in a manner that can do no one any good, and may, indeed must do, mining considerable harm.

The fact that notwithstanding the low price of copper, Bedford United has been able to make a profit and declare a dividend is another proof of the success to be achieved by opening up mining enterprise in Devon in the right way. The manner in which some of the most promising localities in that county have been neglected is somewhat singular; but hardly more singular after all than some of the unaccountable failures that have helped to produce this result.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

May 22.—Business has not improved upon the week, yet the prospects of the Coal Trade are rather better, as the result of the wages arbitration which has been held this week. It cannot but be that some reduction in the present wages will be awarded by the President, for the masters are badly in need of relief if they are to keep their collieries still open at the present prices, and no better prices can at present be got; indeed, prices are rather easier in actual business on the week. A few good sales of manufacturing fuel have, however, been made this week and last by some of the owners. House coal is very dull, and as the result the competition from the Chase in mill and forge fuel is still increasing. Pig-iron is comparatively neglected. Deliveries from the furnaces are below the average, consequent upon the restricted operations at the finished ironworks. Mine iron is quoted 80s. for cold-blast, and 60s. for hot-blast. Cinder iron 40s. Hematites are about 66s. 6d., though higher figures are quoted. Finished iron is selling at 6*l.* 5s. to 6*l.* 10s. for hoops, 7*l.* for sheets (singles), 7*l.* 10s. for tank-plates, 8*l.* 10s. to 9*l.* for boiler-plates, and 7*l.* 10s. to 7*l.* for best bars.

The Coal Trade Wages Board sat in Birmingham on Tuesday, and appointed Mr. Joseph Rowland, solicitor, President. Mr. J. B. Cochrane presented the employers' claim for a reduction on wages. For some time past, he said, trade, instead of mending, had steadily grown worse, and the masters now wished him to say what should in the future be a fair day's wage for a fair day's work. They were now paying a standard of 3s. 8d. per day to the loaders in the Thick coal pits. The pikemen were also paid according to the same standard, but if they did not work by "stint," they were paid at the rate of 1¼ day for a day of eight hours. In addition to wages, the colliers had beer and house coal. The masters asked the President to base his award upon the comparative wages and price of coal in 1879 and the wages and prices now ruling. Mr. Barnes, on behalf of the men, said that the wages paid in 1879 were the lowest he ever recollected, and he had been a miner for 48 years. He suggested that the President should take the list price of 1871, and not 1879, to base his award. In 1871 Thick coal men's wages were 5s. a day, loaders received 5s. 6d., and coal sold at 10s. a ton. At the present list price of coal, pikemen's wages should now be 3s. 10½d. per day, upon the basis of the wages which ruled in 1871. The masters said that they were opposed to the list price of coal being taken as a basis. The President had the selling prices before him for the past 10 years, and he would be able to form a judgment from that document. Nineteen collieries out of every 20, said Mr. Groucutt, an employer, were losing money rapidly, and collieries were being shut up in the district. The President promised to give his award at an early date.

The ironworkers have this week generally accepted the drop in wages of 3d. per ton on puddling and 2½ per cent. to the millmen, awarded by the President of the Iron Trade Wages Board, pretty quietly. At one works in the Westbromwich district the old wages are being given for this week, until a settlement can be come to with the men's leaders; but it is expected that the reduction will be accepted.

It has now been determined to form the Millmen's Association to which I made reference last week, and a Bilston ironworker has been elected chairman.

THE DRAINAGE OF THE STAFFORDSHIRE MINES.

The colliery owners and occupiers of South Staffordshire have long been complaining that whilst they pay rates for the unwatering of the mines by drainage works, the governing authorities of the 13 towns in the drainage area are continually damaging the works by detritus from roads, and by sewage. The authorities themselves also recognise the position, and many of them to escape the heavy penalties to which under the Mines Drainage Acts they are liable have entered upon costly additional sewerage schemes; united action being precluded by the honeycombed nature of the area. The General Drainage Committee of the Commissioners think they see a way out of the difficulty for both sides. The natural outflow of the whole area is on its south-eastern confine, at a locality known as Elwells Pools, Wednesbury. It would be possible, they believe, to convey all the sewage and detritus of the local authorities to this spot by making use of certain of the Commissioners' surface streams along a portion of the route. This proposal was put before the governing bodies of the 13 towns affected at a conference in Wolverhampton, on Wednesday, at the offices of the Mines Drainage Commissioners, presided over by Mr. Walter Williams, Chairman of the Commissioners. It was also estimated that the scheme would cost about 250,000*l.* less than individual schemes, whilst doing the work more effectually. If when the Conference reassembles in a month's time it should be decided to go into the matter and obtain Parliamentary powers there may be some hope that the present heavy rates may be reduced, and that the colliery owners of the South Staffordshire district may obtain that relief which in the present state of the trade they so sorely need.

TRADE OF THE TYNE AND WEAR.

May 22.—There is a slight improvement in freights from this district to the Baltic, and also to some other quarters, but the depression in the shipping trade is still seriously felt, and many ships continue idle, while others are worked at a loss. The scheme for laying down 25 per cent. of the vessels employed—that is, the extended organisation to carry this out has, as we expected, failed. Managers and companies must, therefore, act for their particular interests. Important changes have been effected in the management of some vessels and companies, and great reductions have been made in the working costs; it is hoped that freights will continue to rise, and with the strict exercise of economy more vessels will be got to work. The Shipping Bill of Mr. Chamberlain is now regarded with a little more favour, but there is still a very great amount of hostility displayed towards it. The proposal of Mr. C. M. Palmer, M.P. for North Durham, to have the bill referred to a Select Committee is certainly fair and reasonable. The question is very difficult and intricate, and this proposal will receive the support of nearly the entire community in this district. This appears to be the only process that can be adopted that will give the shipowner an opportunity of fairly stating their case, and of having all matters in dispute thoroughly sifted. That a case has been made out, showing that further legislation is necesary is not denied by moderate men; but the time is very unfavourable for introducing such a measure, and if it could be delayed until next year it is very desirable that it should be postponed. One very remarkable feature in the case is this. A very bad feeling has sprung up between the framer of the bill, the Board of Trade, and the great body of shipowners, and serious charges have been freely made on both sides, and the lapse of time and more free and full discussion may clear away some of these grave difficulties. The proposed application of the principle of applying the Owners' Liability for Accidents Act to sailors has been met with great hostility, but it is evident that the sailor has quite as much need of protection as the coal and other mines; and as to the consequences in the case of coal miners, dire predictions were indulged in. It was stated that the operation of the Act would lead to the utter ruin of some colliery owners, but those fears have not been realised; on the contrary, the working of the Act has tended generally to the improved management of mines, and also to the benefit of all concerned; there is, therefore, ground for hope that the passing of a well-digested measure for regulating the working of shipping will have similar results.

The Coal Trade continues steady, and prices of best steam coals are firm. Turns are rather longer than they were at some of the collieries. The uncertain working of some of the collieries in Scotland is likely to benefit the trade in this district. At Tyne Dock, and at the other principal shipping places on the Tyne and Wear, about an average business has been done during the past week. At Tyne Dock the shipments were 91,000 tons, an increase over the quantity shipped in the corresponding week in last year. In Durham the demand for gas and house coals also continues fair, and most of the works are fairly employed. The demand for coke not contracted for is, of course, very quiet, and this must continue until we have a revival of the iron trade. There is no change in the position at the Thornley group of collieries; the entire works will be offered for sale by auction in Newcastle very shortly.

An important discovery of a coal seam has been made at the Hamsterley Colliery, situated on the Derwent, in West Durham. The works are the property of Dr. Watson, of Bumpfield, and a large quantity of excellent coking coal and fire-clay has been worked there, but lately a series of "faults" or "troubles" were met with which cut the seams off, and it was feared that the works would have to be closed. However, Mr. Allan, the manager, conceived the idea that the Busty seam, the most important and valuable coking seam in the district, would be found in a certain direction; and, although his views were opposed by mining engineers called in to inspect the works, he persevered, and ultimately he directed that bore-holes should be put upwards from a drift which had been driven some distance through the "troubles" or disturbed ground, and fortunately at some distance above the exhausted seams a valuable and extensive bed of coal has been found, varying from 3 ft. 9 in. to 8 ft. in thickness. This is, of course, a most fortunate circumstance, and it will add most materially to the value of the colliery. The completion of this arduous enterprise has been considered a fit time to present to Mr. Allan a testimonial, which has been liberally subscribed to by the officials and workmen engaged on the works. The testimonials, which are valued at upwards of 35 guineas, consisted of a handsome black marble timepiece and an aneroid barometer, and also a gold watch and guard for Mrs. Allan.

The depression which has fallen upon the Iron and Coal Trades of the North of England between the Tees and the Tyne has laid off many thousands of operatives. The Durham Miners' Association, however, has made some provision for those members who are unemployed at the Thornley and other collieries. The Ironworkers' National Amalgamated Society have also assisted their members by allowing them 5s. per week. Large and increasing numbers of men are out of work in the finished iron trade of the North of England district. A considerable amount of new orders have, however, been received in the district lately. At the great works of Sir William Armstrong and Co., at Elswick, there is much activity, and at the old locomotive works in Newcastle, Messrs. Hawthorn and Co., and also Messrs. Stephenson, have booked large orders for engines of various kinds. The North-Eastern Railway Company have given out orders for a number of new locomotives, and the company also continue to employ their full complement of men at their extensive works in Gateshead, and at Darlington and other stations.

The Iron Trade market at Middlesborough on Tuesday was fairly attended, but very little business was done. The makers, have, however, decided not to sell No. 3 pig-iron at less than 37s., and No. 4 forge at 35s. 6d. The quotations for warrants is 36s. 9d. The stock of Messrs. Connal's warrants show a decline this week. There is a reduction of 1550 tons, which now stand at 58,877 tons. The shipments are heavier than for some time past, the quantity sent away for the week ending Monday of pig-iron being nearly 22,000 tons, and also 9740 tons of manufactured iron and steel. The bridge builders, and most of the engineering brauches are doing a fair trade, except when they produce shipbuilding material. The bar trade is very fairly employed, and prices are better maintained than for other classes of iron. Coal and coke unchanged.

REPORT FROM LANCASHIRE.

May 22.—As the natural result of the continued warm weather there has been a considerable falling off in the demand for all classes of fuel for house-fire purposes, and pits in many cases have had to go on less time, whilst where they are kept running as much as four full days a-week a portion of the output is going into stock. Common round coals for steam and forge purposes are without material change, the demand for these continuing only very moderate, with supplies plentiful in the market. Quoted rates remain much the same as last week, but for quantities, and especially in the common classes of round coal, very low prices are taken. Best Wigan Arley averages about 9s. per ton at the pit's mouth; inferior sorts, 7s. to 7s. 6d.; ordinary Pemberton Four-foot coal, 7s.; common house-fire coals, 5s. 6d. to 5s. 9d.; and steam and forge coals, 5s. 3d. to 5s. 6d. per ton. Burgy still meets with only a slow sale, with prices rather tending towards weakness; but slack is running off rather better, owing to the lessened production of this class of fuel. Burgy at the pit's mouth averages 4s. 6d. to 4s. 9d., and good slack about 3s. 6d. to 4s. per ton.

In shipping there is not much more than moderate business doing, and prices continue very low, Lancashire steam coal not fetching more than 7s. to 7s. 3d. per ton delivered at the High Level, Liverpool, or the Garston Docks.

Business in the Iron Trade continues without improvement, and all through remains in a very depressed condition, with a good deal of underselling to secure orders, although quoted rates nominally remain unchanged. With regard to the future, there is so little confidence that some of the outside brands of pig-iron are being offered here for delivery over the whole of this year, and in some cases for a considerable period into next, on the basis of the present minimum prices, which are considerably under what makers are quoting. The steel trade is also in quite as depressed a condition as pig-iron, and the finished iron trade continues without animation, the shipping season so far having brought no activity into the market. The prices asked are practically the same as those quoted last week; but where any business of weight is done it is difficult to say within 1s. or 1s. 6d. per ton what prices are in many cases being taken, and list rates are really little more than nominal.

The condition of the engineering trades remains without material change. Locomotive builders, tool-makers, and machinists are kept fairly busy, but generally there is a falling off in the weight of new work coming in, and very low prices have to be taken.

An ingenious arrangement for the prevention of accidents to pit cages by the breakage of the winding-rope has been designed and patented by Mr. Thomas Brown, of Walkden, and Mr. William Brown, of Little Hulton, near Manchester, and a model of the apparatus, which has been submitted to a number of mining engineers, has been very highly commended as an effective arrangement for securing the object it has in view. Levers are placed on each side of the cage, and turn on pins, and form the centres on which the levers work. The ends of the levers are provided with hinge-joints, from which extend upwards suitable rods, having rollers extending outwards, with flat circular surfaces to ensure an efficient grip on the guide-rods which are fixed to the sides of the cage. The opposite ends of the levers are secured by a huge joint to connecting-rods joined together above the cage by tie-rods, to which a link is attached to the winding-rope. When the cage is suspended the rollers are drawn away from the guide-rods, and the whole weight is supported on the connecting-rods, as well as the pins or centres of the levers. In the event of a breakage, the whole weight of the cage is thrown upon the centres, causing the suspended ends of the levers to fall, and the opposite ends to rise with the rollers into the inclined plane and grip the guide-rods by which the cage is held, supported by its own weight, acting upon the rollers in the inclined planes, thus preventing it falling down the shaft while unattached to the rope. Springs are also attached as an additional safeguard in case of the accidental breakage of the rope.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

May 22.—The Coal Trade of Derbyshire is far from being in a healthy state even for the time of year, for the pits in several districts are only working three and four days a-week. At some of the collieries the men have submitted to a reduction of wages, and it would now appear as if such must become general. Near to Mansfield, on the borders of Derbyshire, some 1500 men have turned out, owing to the employers having increased the rents of their cottage property, and limited or stopped the allowance of coal. The miners stick out hard for all privileges at a time when they must know that their employers are not carrying on work at a profit. But these strikes do not last long, for there have been several lately in Derbyshire, and as there are no funds to support the men they soon give up the struggle, of course being much worse off at the end than they were at the beginning. Some few collieries directly connected with the Metropolis have done tolerably well of late, for a fair tonnage of house coal, considering the time of year, has been put on to both the Midland and Great Northern for conveyance to the Metropolis, especially from Clay Cross, Grassmoor, Langley Mill, Eckington, and Blackwell. More steam coal has been required for locomotive purposes, whilst something like an average has gone to the blast-furnaces. The quantity sent away for shipment, however, has not been large, although this may be considered the busy export season. Engine coal has also been in rather moderate request, and in gas coal not so much is doing, even on contracts.

The Iron Trade keeps up well, considering the condition of the leading centres; but it may be said that there are a good many furnaces out of blast, makers evidently endeavouring to make the production tally as near as they can with the local consumption and the outside demand. It would appear that there is likely to be an increase in the production of rolled iron, for the Butterley Company, or the Messrs. Wright, have just put down another large rolling mill, so that they must now have seven or eight at the works at Codnor Park and Butterley. They have of late been rather quiet, although at one time the company, or firm, sent its products to all parts of the world, and a specimen of their work is to be seen at the St. Pancras Station in the vast girders that support the roof. The works also supply a good deal of merchant iron, for the disposal of which there are warehouses at both Sheffield and Leeds. The foundries engaged on heavy castings, including gas and water pipes, have been working very fairly of late, and there is little more doing in lighter material. Producers of malleable iron are doing a steady trade, whilst a moderate business is the rule at the engine and machine works.

In Sheffield business continues quiet in most branches, the only one that is really active being the armour-plate. In addition to the foreign competition in cutlery, tools, and scissors, the German manufacturers are sending considerable quantities of steel-plates for shipbuilding to this country and are able to sell at from 10s. to 20s. per ton below our own makers. Ordinary iron-plates are still in but moderate request, and there is not so much doing in sheets. The rail trade is still comparatively quiet; but there is a good output of Bessemer in the shape of billets of special qualities for working into tools and other material. Crucible steel is not in such good request as it was in its plain state for exportation; but a good deal is being used up for the production of wheels of various kinds. The cutlery houses are kept but moderately going; but an improvement is now looked forward to in the American demand, which has been quiet since the commencement of the year. Tool makers, too, are not by any means busy, and there has been a falling off on the part of some of the file manufacturers. The enquiry in this department, however, is principally for hand-cut files. A new machine for cutting has just been brought out, which does its work remarkably well, but the hand-made is not likely to suffer much in consequence. Not so much is doing in large and circular saws, but some of the makers are doing tolerably well in the small and common kinds. Light agricultural implement makers are becoming busy, and there appears to be more doing in lawn-mowers, and the "Invincible" evidently takes the lead of all others, as it deserves to do.

In the South Yorkshire district the collieries continue to be fairly employed, a good deal of the hard or steam coal being sent to Hull and Grimsby for shipment to the North of Europe in particular. During the last few days a considerable tonnage has also gone to Goole for shipment to London, Weymouth, Gravesend, and other of the home ports. House coal moves off rather slowly, and the prices realised for it are such as to leave little or no profit to the colliery owners. It is, therefore, probable that before long that the miners will be asked to lower their prices, as those in several districts have already done; and this is likely to lead to a struggle that may be sharp, but will not last long.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

May 22.—The tenth annual meeting of the North Wales Quarrymen's Union was held on May 10, at Ffestiniog. There was a large attendance of delegates. On the evening before addresses were given by quarrymen "On the Union, and some of its Dangers," "The Claims of Labour" and the "Rights of Working Men, as shown by Adam Smith." The Saturday's meeting was presided over by Mr. R. Parry (Vice-President), the President (Mr. Robert Parry, of Llanberis) having died during his term of office. The total assets at the end of the tenth year amount to 11,792*l.* 5s. 8d., showing an increase of 900*l.* during the year. Such a sum, the secretary said, will prove of universal benefit if properly directed. The slate trade was described as having been unsettled during the year, and it was thought that the differences that had arisen between the managers had exerted an unfavourable influence upon the trade, being one cause of depression and instability. A discussion took place as to the desirability of providing a relief fund for sick and disabled members. The proposition was favourably received, but nothing definite was done, the proposal standing over for a year, as does also a proposition for continued grants in aid of emigration. It was stated that 2000*l.* had already been voted for this purpose, and one of the delegates observed that emigration was better than strikes. Altogether the meeting was business-like in character and reasonable in tone, and it affords an example of moderation and good sense that may be well followed by similar associations.

An immense fall of top rock has taken place at the Welsh Slate Quarry, Ffestinog, which it is estimated will cost 25,000*l.* to remove. In the meantime work is carried on. Mr. John Lewis, of Portmadoc, the shipper to this company, has been appointed agent, in the place of the late Mr. Owen Morris. The railway which it was intended to make up the Tanat Valley to Llangynog seems to have fallen into abeyance, consequently the phosphate mines, lead mines, and slate quarries are all but stopped. The miners and quarrymen find good work in the neighbouring valley of the Vyrnwy, where the Liverpool Waterworks are being constructed. The great quarry there now yields about 400 tons of stone a day; this is used in building a strong masonry dam across the valley, in which blocks of stone weighing up to 12 tons are now used. The tunnel, over two miles long, which will be the outlet for the water into the Tanat Valley, is being driven

by steam rock-drills, and is advancing at the rate of about 100 yards a month.

The Wirral Railway Bill, which includes the making of an important link in the various lines now converging from North Wales to Liverpool, has passed the Committee of the House of Commons. The Chester Town Council, who opposed the construction of a new line from Chester to Connah's Quay, are now all but deserted by the ratepayers, over 3000 of whom are petitioning in its favour. Following the report of the Commission on Technical Education recently published, the Llangollen School Board have decided to teach mechanical and other drawing in their schools. The Council of the Manchester Technical School have received from Mr. J. C. Edwards, the owner of the Penybont and Trefynant Terra Cotta Works, a gift of examples of bricks, tiles, and terra cotta work, to be used by the pupils in building construction. The appointment of Prof. Reichel to the post of Principal of North Wales College gives general satisfaction. Mr. Reichel is described as a man of great ability and acquirements.

With the continued dry weather the salt springs are failing, and although the trade is in a very quiet condition stocks are being lowered. The coal trade is rather quiet, owing partly to the fine weather and partly to an insufficiency of shipping orders, and most of the collieries in Denbighshire are not working more than four days a week. Another fatal accident occurred at the Gatewen Colliery, last Thursday, when Henry Jenkins, a banksman, lost his life through becoming entangled among the railway wagons. The iron trade is quiet, although the manufacturing industries are pretty fully employed, and with the inflow of orders which are coming in from abroad a hopeful feeling prevails with regard to an early improvement. No improvement can be reported concerning lead, copper, and zinc mines.

TRADE IN SOUTH WALES.

May 22.—The activity of the Steam Coal Trade is well maintained at all the Welsh ports. At Newport, however, there is a temporary lull, owing to the large quantities of coal coming down, but that will only be, it is anticipated, for a few days. The amount of coal sent away from Cardiff last week was 146,484 tons foreign and about 20,000 coastwise, with 3200 tons patent fuel; Newport, 26,077 tons foreign and 20,864 coastwise; Swansea, 19,456 tons foreign and about 15,000 coastwise, with 7169 tons patent fuel. The house coal trade is slackening, in consequence of the warmer weather. Small steam coal is in quiet demand, but the patent fuel trade is brisk.

The Cyfarthfa Steelworks were started on Monday last. The conversion has been going on for nearly two years, under the superintendence of Mr. Williams, of Middlesborough, and has cost, it is stated, upwards of 100,000*l*. The Cyfarthfa Ironworks, which made the Crawshay family millionaires, have been in existence about a century, but for the last few years they have been closed, only the collieries in connection with the property being worked. It is unfortunate for Messrs. Crawshay that the period of recommencement of operations should be at a time when prices are ruinously low.

The Tin-plate Trade being good, it is thought to be a favourable time for re-opening some of the closed works. Llangennech Ynispen-llwch, Pantyffynon, and Penclawdd are among those which will be restarted, and Britonferry Works will probably follow. Trade in tin-plates is now good, and prices fair, good IC cokes fetching from 15s. to 16s. Squares are in great demand, the enquiry being better than was ever known in the trade.

THE AUSTRALIAN CORDILLERA.—The Cordillera, or Great Coast Range of East Australia, which commences in the Cape Yorke Peninsula in Northern Queensland, and terminates on the eastern border of South Australia, extends right through New South Wales, at a varying distance of from 30 to 135 miles from the coast, and attains its greatest elevation in Mount Kosciusko, near the southern boundary of the colony. The summit of this, the highest mountain in Australia, is 7176 ft., and is snow-clad throughout the year, excepting occasionally during the summer months. The crest of this Great Coast Range is narrow along the greater portion of its course, being only a few yards wide in places; but in some of the northern and southern portions of the colony, as in the New England and Monaro districts, it spreads out into extensive table-lands. There are numerous lateral ranges branching off from it, but none of these are of any considerable length, excepting one which leaves the main range in latitude 34° S., and extends at right angles to it, in a north-westerly direction, and forms the watershed between the tributaries of the Darling and Lachlan rivers. This line of elevated country must once have reached the Grey and Barrier ranges in the north-western part of the colony; but the valley of the Darling now forms a gap in it. The main orographical features, therefore, of New South Wales present on the map two lines of elevated land, the one meeting the other at right angles, and forming in irregular outline a figure resembling the Roman capital ⊐, having the cross-line, or upper part of the letter, placed, as it were, against, and nearly parallel with, the coast line. On the north side of the lateral range lies the great basin of the Darling river, and on the south side is that of the Murray river. The low-lying central portions of these basins consist of vast alluvial plains, which have been formed from the sediment brought down by flooded rivers, chiefly from the high slopes of the Cordillera.

DAILY INSPECTION OF MINES—THE SHIREOAKS PROSECUTION.

At the Worksop Petty Sessions, on Thursday, a case of considerable importance was heard arising out of the circular issued in September last by Mr. Thos. Evans, H.M. Inspector of the district:—"I am directed by the Secretary of State to call your attention to the 2nd and 3rd general rules of the Coal Mines Regulation Act, requiring the working places of mines and the roadways leading thereto to be examined before they are entered by the workmen, and to express his opinion that due effect is not given to these provisions for the protection of persons employed in the mine if the examination of a road or working place is made more than two hours before such road or working place is actually used; and I am to request that you will at once make such arrangements, if none are already in operation, as will secure that this interval of two hours shall be in no case exceeded. I am to add that, in calling attention to these two general rules, the Secretary of State must not be understood as attaching less importance to other rules for the safety of the mine, or to the due observance by those employed in the mine of the duties imposed upon them by the special rules." In the present instance Mr. C. Tylden Wright, manager of the Shireoaks Collieries, was summoned at the instance of Mr. Thomas Evans, Her Majesty's Inspector of Mines for the Midland district, for not having the workings of his colliery inspected within a reasonable time of the commencement of work on March 14 and 31, in accordance with General Rule 2, whereby he was guilty of an offence against the Act, and had become liable to a penalty. Mr. John Smith, of Derby, prosecuted, and Mr. Parker Rhodes defended. It appears that towards the close of last year, Mr. Evans, by order from the Home Secretary, sent a circular letter to the colliery proprietors in the Midland district, requesting them to have all the workings inspected within four hours of the commencement of work. A meeting of the proprietors was held, at which a resolution was passed strongly condemning this circular, and protesting that it was unnecessary to accede to its request. The present case, therefore, was regarded as a test case, and great interest was centered in the proceedings, gentlemen connected with the mining interest being present from all parts of Yorkshire, Derbyshire, and Notts.

On behalf of the Government Inspector, Mr. John Smith (of Leech and Smith, Derby,) contended that the Act had not been complied with, and called the deputies from the collieries, who proved that in the case of some of the workings an inspection had not been made within about five hours of the commencement of the shift; but in others an inspection had been made immediately before the workmen entered. They also stated that this system had been in vogue for at least 11 years.—Mr. Arthur Henry Stokes, Assistant Inspector of Mines, said that he did not consider an inspection of the mine five hours before the shift was sufficient to ensure the safety of Shireoaks Colliery. He had inspected it for 11 years, and he considered it a fairly ventilated one. He considered it a physical impossibility for a man to properly examine 10 miles of roads and workings, as the deputies had to do here.—Mr. Walter Salmon, managing director of the Plaxton Colliery, said their pits were examined every two hours, but they worked with naked lights.—Mr. Fred. K. Channer, certified agent for the Butterley Company, said that in their collieries, numbering 27, they inspected within two or three hours of the commencement of work.—Mr. Joseph Humble, manager for the Staveley Company, said they got about 900,000 tons of coal per year, and they examined within three hours of the commencement of the shift, and found no practical difficulty in doing so.

For the defence Mr. Rhodes contended that inspections at Shireoaks had been made in compliance with the second general rule, and that the Act did not record any special time limit, and therefore no time limit could be imposed. He endeavoured in the course of the correspondence which took place upon the case to have the point at issue settled beyond all doubt. The summons charged Mr. Wright with not having on a particular day inspected the mine with safety-lamps before the men went to work, but the witnesses called in support of the case proved that they did inspect. The deputies told the Court that they examined one place five hours before the men went to work; was that not a compliance with the charge set out in the summons? An inspection even 11 hours before the men went in would have sufficed. He would remark that Mr. Wright and those associated with him did not say for one moment that they would not make an inspection within two hours. That was not what was said. Mr. Smith said they must do it to comply with the law, but they said they were not bound by the law to do it, and until they were bound they refused to do it on that ground. It was not a question of economy, as the management were willing to adopt every precaution necessary for the safety of the men. It was their contention that if this theory of inspection were carried to a great extent further it would entail much more serious evils than those they were endeavouring to cure. He complained of the course taken in summoning them there when the point might have been settled by arbitration; again contended that they had complied with the Act of Parliament, though not perhaps with the circular of the Home Secretary, and said he claimed a dismissal of the case on the ground of law.

In the result the Bench found that Rule 2 had been complied with, and therefore dismissed the summons with costs, but on behalf of the Government a "case" was asked for and granted, so that the matter will be taken into a higher Court.

MINERAL WEALTH OF ARIZONA AND MEXICO.

The enormous mineral wealth of the border regions of Arizona and Mexico has been several times referred to by correspondents of the *Mining Journal* writing from the districts, and in an interesting article on the Papago country the San Francisco Daily Exchange states that it comprises that belt of territory lying south of the Gila river, in Arizona, and extending as far south as Altar, in Sonora, South Mexico. Comparatively speaking, there is little known about its mineral or agricultural worth. Humboldt travelled through this then unknown region, and was the first to express an opinion on its merits. "The wealth of the world will come from Arizona and New Mexico" is an expression that has passed into history. This was Humboldt's. Until very recently the Papago country was almost unknown, except to those intimately acquainted in the vicinity. The discovery of the celebrated Quijotoas has awakened the interest of outsiders and attracted the attention of capitalists to the once obscure region. For several years past vain attempts have been made to introduce San Francisco capital into this part of Arizona, but it was not until the bonanza firm invested in the Quijotoas Mines that much could be done with Arizona property in San Francisco. Arizona is more indebted to Philadelphia, New York, and Boston for what she has than to her next-door neighbour San Francisco.

The Quijotoas Mines are presumably the most important discovery made on the Pacific coast since the memorable days of the Comstock. Like all similar finds, this was an accident, although the Indians were acquainted with the existence of precious metals in these mountains even before Cortes invaded the halls of Montezuma. The old workings on the placer mines are quite perceptible even to-day, and, no doubt, could be made profitable if properly handled. The Cababi Mines, 15 miles east of the Quijotoas, are, and have always been, worked very profitably. The old Picacho Mines are one of the institutions of Arizona, and several eastern companies are now operating in this district. The old Mexican reduction works, although in a rather dilapidated state, are yet to be seen at Cababi, and it would not be at all surprising if this district yet rivalled the Quijotoas. At present, however, attention is concentrated on the Quijotoas. The Peerless Mine, on the Quijotoa Mountain, is a wonder. The ore body is 80 ft. wide, and will average $100 per ton. This mine, of course, is owned by the bonanza firm of this city. The Peer Mine is an extension of the Peerless, and is claimed to be in all respects as good, except that the north end of the mine extends down to the valley, and the lode is covered with sediment. The Crocker Mine is the south extension of the Peerless, and is owned by Mr. Cunningham of this city. The main ore chute of the hill is about equally divided between the Peerless and the Crocker. The Peerless Mine is being developed from both sides of the mountain by two tunnels, which are to penetrate to the vein, and will tap the lode at a depth of 450 ft. from the croppings, which is about the depth that the other tunnel will cap the Crocker property. As soon as the vein is tapped at the above-mentioned depth the future of the Quijotoas is assured.

West of the Quijotoas, about 15 miles, is the celebrated El Rosario Mine, about two miles south of the line in Sonora. The Rosario has been extensively worked by the Mexicans for the last 12 years, having yielded 20,000 ozs. Lately the Rosario has been visited by J. D. Childs, in the interest of some San Francisco parties, and, acting on his report, the mine has been incorporated in San Francisco. The Rosario vein is one of the most singular fissures in the world. It is encased in syenitic granite, and is as regular as the laws of gravity could permit. The walls are smooth, and the vein pitches at an angle of 70°. The length of the claim is 2626 ft., and it carries pay ore its entire length. The character of the ore is horn silver and chloride, and it has sampled $133 per ton. The Rosario has an advantage over the Quijotoas, as there is an abundance of water within one mile of the mine, and the mine can be reached over a splendid wagon road from the railroad at Gila Bend. As matters look at present, the Papago country will be the scene of considerable activity in the near future.

THE TUCKINGMILL FOUNDRY COMPANY,

(TUCKINGMILL FOUNDRY AND ROSEWORTHY HAMMER MILLS),

CAMBORNE, CORNWALL,

Engineers, Iron and Brass Founders, &c.

REGISTERED TRADE MARK. MANUFACTURERS OF EVERY DESCRIPTION OF REGISTERED TRADE MARK

T. F. Co.

PUMPING WINDING AND STAMPING ENGINES

ALL KINDS OF

MINING MACHINERY, SHOVELS, AND MINERS' TOOLS;

ALSO OF

BLAKE'S STONE BREAKERS.

T. F. Co.

ESTIMATES GIVEN UPON INDENTS AND SPECIFICATIONS,

ILLUSTRATED CATALOGUES POST FREE ON APPLICATION

LONDON OFFICE: 55, GRACECHURCH STREET, E.C.

THE IRON AND COAL TRADES REVIEW.

The IRON AND COAL TRADES' REVIEW is extensively circulated amongst the Iron Producers, Manufacturers, and Consumers, Coalowners, &c., in all the iron and coal districts. It is, therefore, one of the leading organs for advertising every description of Iron Manufactures, Machinery, New Inventions, and all matters relating to the Iron Coal, Hardware, Engineering, and Metal Trades in general

Offices of the Review: 342, Strand, W.C.

Remittances payable to W. T. Pringle.

THE COLLIERY READY-RECKONER AND WAGES CALCULATOR.

By JAMES IRELAND

"Will be the means of preventing many disputes between pay clerks and colliers."—*Mining Journal*.

To be had on application at the MINING JOURNAL Office, 26, Fleet-street, E.C

Just published, price 7s. 6d., post free.

TABLES FOR ASCERTAINING THE PRICE OF TIN ORE AT A GIVEN STANDARD AND PRODUCE:

To which is added Tables for Ascertaining the Value of any Quantity of Black Tin, from 1 lb. to 10 tons, at any price from £20 to £100 per ton.

Originally compiled and calculated by the late Mr. R. WELLINGTON; and now extended, reprinted by Mr. W. BAILEY, of Camborne, and carefully verified throughout.

London: MINING JOURNAL Office, 26, Fleet-street, E.C.; and may be had by order of all Booksellers.

Australia: GEORGE ROBERTSON, Melbourne, Sydney, Adelaide, and Brisbane.

Just published.

THE NORTH WALES COAL FIELDS.

Being a series of Diagrams showing the Depth, Thickness, and Local Names of the Seams in the principal Collieries of the various districts, with Index, ecological Map, and horizontal sections across the Ruabon, Brymbo, Buckley, and Mostyn districts.

By JOHN BATES GREGORY and JESSE PRICE, of Hope Station, near Mold, Flintshire.

Price: Mounted on holland, coloured and varnished, and fixed on mahogany rollers, 30s. each; or in book form, 12×9, mounted and coloured, 25s. each

May be obtained, by order, of all Booksellers, or direct from the MINING JOURNAL Office, 26, Fleet-street, London, E.C., upon remittance of Post Office Order for the amount.

MR. P. S. HAMILTON (late Chief Commissioner of Mines for the Province of Nova Scotia), PRACTICAL GEOLOGIST, MINING AGENT, and MINING ENGINEER, HALIFAX, NOVA SCOTIA.

PURCHASES and SALES of MINING PROPERTY effected, with careful regard to the interests of clients.

MONEY LENT, at EIGHT, NINE, and TEN PER CENT., on FIRST MORTGAGE of FREEHOLDS for IMPROVEMENTS and STOCKING, said freeholds in the Province of MANITOBA.

Address, HERBERT C. JONES, Solicitor, 20, Masonic Hall, Toronto

PHILLIPS MONTHLY MACHINERY REGISTER.—THE BEST MEDIUM IN THE KINGDOM FOR THE PURCHASE OR SALE OF NEW OR SECONDHAND MACHINERY.

Subscription, 4s. per annum, post free.

PUBLISHER AND PROPRIETOR, CHARLES D. PHILLIPS, NEWPORT MON.

The New System for Working Gold and Diamond Alluvials.

THE "BALL PATENT."

9, BUSH LANE, CANNON STREET, LONDON, E.C.

This new system renders River and Placer Marsh Swamps and Plateau Mining the cheapest of all. No head of water required as per Californian Hydraulic System. Only a few tons of water wanted a day.

ABSOLUTELY CLEARS THE LAST PARTICLE ON BED ROCK OR CLAY BOTTOM.

No fall required for dumping tailings Depths of rivers, floods, and other difficulties entirely surmounted. 600 tons a day raised, dispersed, washed, and dumped per day for 3d. a ton by smallest plant 1200 tons by second size plant at 2d. per ton.

See *Mining Journal*, 19th January and 16th February, 1884, on THE CHEAPEST METHOD OF TREATING AURIFEROUS ALLUVIALS.

NOTICE—TO MINING INVESTORS.

In such esteem is the system held that several extraordinary participations in Gold Alluvials are offered simply for the trouble of putting plant on certain concessions and working it.

Syndicate A completed.

WANTED, investors in B Syndicate, composed of 750 Shares of £10.

Profits are so enormous that it is deemed advisable not to publish them, but they will be communicated to *bona fide* inquiries.

SUBSCRIPTION NOW OPEN.

Apply by letter first, or personally at above address, Mondays and Tuesdays, 11 to 2 P.M.

MACDERMOTT AND GLOVER'S PATENT

PERCUSSIVE ROCK PERFORATOR

(IMPROVED)

FOR HAND-LABOUR ONLY,

IN HARD ROCK

FOR MINES, QUARRIES, AND GOVERNMENT CONTRACT WORK.

RATE OF PENETRATION IN GRANITE, 1½ to 2 inches per minute.

Price £50 complete.

For full particulars, apply to

GLOVER & HOBSON,

ENGINEERS & MILLWRIGHTS,

ALBERT IRONWORKS, ST. JAMES'S ROAD, OLD KENT ROAD, LONDON, S.E.,

SOLE MANUFACTURERS; OR TO—

M. MACDERMOTT, 25 and 26, Pudding Lane, London

N.B.—A machine can always be seen at work (without notice) at the Albert Ironworks. [TELEPHONE 4664.]

PERFORATED SHEET METALS

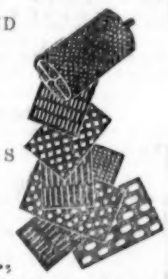
FOR

TIN, LEAD AND COPPER MINES,

MILLERS, BREWERS, AND MALSTERS,

COLLIERIES AND QUARRIES,

COFFEE ROASTERS AND SUGAR REFINERS.



ALDRED & CO.,

WORKS: PARKER STREET, ASHLEY LANE, MANCHESTER

INCREASED VALUE OF WATER-POWER.

MacADAM'S VARIABLE TURBINE.

This Wheel (which is now largely in use in England, Scotland, and Ireland) is the only one yet invented which gives proportionate power from both large and small quantities of water. It can be made for using a large winter supply, and yet work with equal efficiency through all variations of quantity down to a fifth or even less if required. It is easily coupled to a steam-engine, and in this way always assists it by whatever amount of power the water is capable of giving, and therefore saves so much fuel.

This Turbine is applicable to all heights of fall. It works immersed in the tail-water, so that no part of the fall is lost, and the motion of the Wheel is not affected by floods or back-water.

These Turbines are at work in nearly every county in England. Apply to—

MacADAM BROTHERS AND CO., BELFAST.

Now ready, price 25s., post free.

COMPOUND DIVISION COST SHEET READY RECKONER,

Designed for effecting in minutes what has hitherto taken hours to accomplish,

For use in making out Cost Sheets of Collieries, Ironstone and other Mines, Iron, Gas, and Water Works, Quarries, and Manufactories generally.

For Accountants, Merchants, Public, and Private Offices.

By WILLIAM WETHERED.

This work is applicable to calculations where any number of articles cost is given sum, and the price of one of such number is required.

The circulation of such a book as this must necessarily be limited. It is doubtful whether it will pay more than the bare cost of publishing, allowing nothing for the enormous amount of labour such a mass of figures has occasioned. The price cannot be named at less than 25s., and it is not too much to say that where it can be applied its cost will be saved in a few weeks. It will be found invaluable to accountants generally.

Copies can now be had, and will be forwarded from the MINING JOURNAL Office on receipt of Post Office Order for the amount.

TELEPHONE NUMBER—1336.

☆ ☆ ☆

Explosives Trading Company, Limited.

TRADE MARK.

TELEGRAPHIC ADDRESS—NELGORB, LONDON.

THE EXPLOSIVES TRADING COMPANY LIMITED

Sell NO DYNAMITE of GERMAN Manufacture, but are allied with the following Manufactories only—

DYNAMITE NOBEL, LIMITED.

ISLETEN PRÈS FLUELEN, SWITZERLAND.

CESANO MODERNO PRÈS MILAN, ITALY.

AVIGLIANA PRÈS TURIN, ITALY.

ONEGLIA (PROVINCE LIGURE), ITALY.

WHICH SUPPLY THE

GOVERNMENTS OF ITALY AND SWITZERLAND.

And obtained among other Medals (English and Foreign),

THE GOLD MEDAL, PARIS EXHIBITION, 1878.

Inferior Dynamite is a cause of so much danger, both in transport and use, that **The Explosives Trading Company, Limited,** make QUALITY their FIRST consideration. The price may, therefore, appear high, but, strength and safety being considered, IT IS LOWER THAN THAT OF ANY OTHER EXPLOSIVE.

The Explosives Trading Company, Limited, refer to the following Extracts from Official Certificates and from Contractors, who have purchased and used no less a quantity than

TWO THOUSAND TONS,

Representing at 1/6 per Pound,

£300,000 STERLING.

All Dynamite sold is specially tested for SAFETY, QUALITY, and CAPABILITY of SUPPORTING SEA VOYAGES, so that Goods bearing this Company's Trade Mark, COMMAND A PREFERENCE in every market.

1. "Always of superior quality.
Airolo, 20th May, 1883. p. pn. L. FAVRE & Cie.,
BOSSI, Director."

2. "Exclusively employed, irreproachable quality.
Paris, 18th June, 1883. REVEILLAC, BARDOL & Cie."

3. "For constructing the line between Fluelen and Gœschenen we used TWO HUNDRED AND FIFTY TONS, the whole of which was supplied by the Dynamite Nobel, Isleten. There was NEVER ONE SINGLE ACCIDENT IN THE TRANSPORT. Gives to these works the best certificate.
Altdorf, 11th October, 1881. Baugesellschaft Fluelen, Gœschenen.
(Sig.) ROB. MOSER."

4. "Quality of the Explosives gives us full and complete satisfaction.
Bellinzona, 8th June, 1883. For the Società Marsaglia, Enterprise de la ligne du St. Gothard, Airolo-Biasca.
(Sig.) A. BONZANIGO, Engineer."

5. "All the Dynamite and Gelatine used came exclusively from the Isleten Works. Quality completely satisfies me. (Sig.) ING. DELL'ACQUA."
Milan, 14th June, 1883.

6. "Entrusted by the Federal Government with divers scientific experiments relating to the manufacture of Dynamite, I had to examine the works and the process employed at Isleten. As a result thereof, the GOVERNMENT CONTRACTED with the directors of the said works for the SUPPLY OF DYNAMITE REQUIRED BY THE ARMY FOR ENGINEERING PURPOSES.
"In every respect CONFIDENCE MAY BE PLACED in the Dynamite of Isleten.
Berne, 15th June, 1879. The Chief of the Corps d'Etat-Major,
(Sig.) SIEGFRIED, Colonel."

7. "For the *fifth time* I have visited the works of the Isleten Co., and have remarked in each visit the infinite care taken in every detail of manufacture, so that its Dynamite is absolutely without danger to the user, and may be transported without risk of any kind.
"The Government Comptroller entirely approves the precautions taken by the Directors.
"The Government reports as to 'acids' have *invariably* been favourable to the Isleten Co.
"I have frequently opened cartridges taken indiscriminately, and have *never found any perceptible trace* of decomposition of the Nitro-Glycerine.
"I do not hesitate, therefore, to state that whatever is possible to produce an article of EXCEPTIONALLY SUPERIOR QUALITY is done at the Dynamite Works, Isleten. L'Inspecteur Fédéral des Fabriques,
Mollis, 7th June, 1883. (Sig.) SCHULER."

The Explosives Trading Co. supply (to purchasers of their Dynamite only)

DETONATORS AND FUSE,

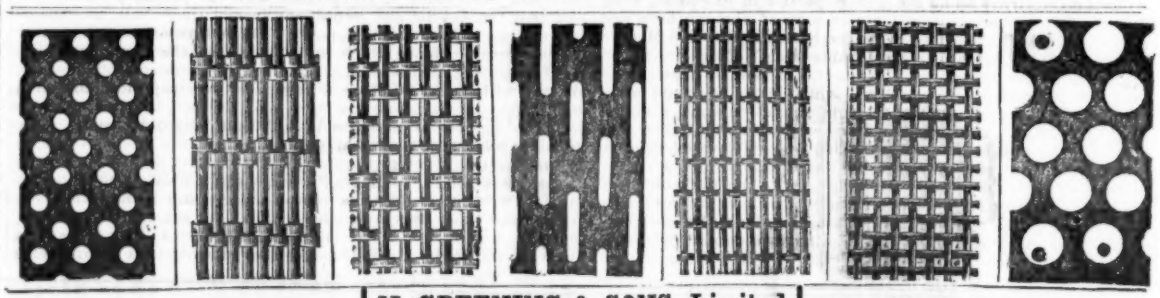
of specially high quality, both Detonators and Fuse being protected by the Company's Trade Mark. Contracts made for regular supplies of Dynamite Detonators and Fuse, delivered by the Company's own boats.

STOCK ALWAYS ON HAND IN THE THAMES READY FOR SHIPMENT.

Sole Agents (with such special advantages as to ensure a large and permanent business) appointed in English Colonies and Foreign Countries.

Sole General Agents for the Company—G. W. H. BROGDEN & CO.,

220. GRESHAM HOUSE, OLD BROAD STREET, LONDON, E.C.



Extra Treble Strong Wire Cloth and Perforated Metals in Steel, Iron, Copper, Brass, Zinc, Bronze.

Made in all Meshes and Widths.

N. GREENING & SONS, Limited,

Wire Manufacturers and Metal Perforators,

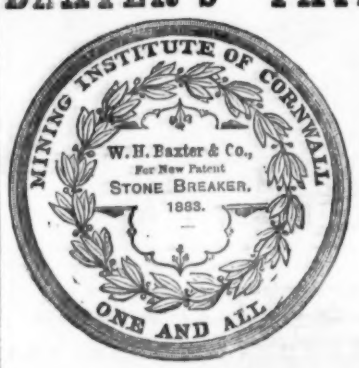
WARRINGTON.

Jigger Bottoms, Trommels, Cylinder Covers, Riddles, Sieves for Diamond, Gold, Silver, Copper, Lead and Tin Mines.

Samples and Prices free on application.

ALSO AWARDED GOLD MEDAL AT CALCUTTA EXHIBITION.

BAXTER'S PATENT KNAPPING STONE BREAKER.



FACTS SPEAK FOR THEMSELVES.

To Mr. Baxter, Leeds. *Cinderford, Feb.* 13, 1883.

DEAR SIR,—I am pleased to be able to tell you that the Machine works splendidly. We are breaking 16 trucks a day now, and we thought it a good day's work to do 10 a day with the old Machine, so you can see the difference. I had a gentleman looking at it yesterday, and he was surprised to see it work so easily. Yours truly, E. ORGAN.

The above refers to one of our 16 by 9 Machines we supplied to replace an "Improved Blake" 15 by 9 Machine. Several of which have already been replaced by Baxter's.

PATENTEES AND SOLE MAKERS,

W. H. BAXTER & CO., ALBION STREET, LEEDS.

MINING MACHINERY, MILLING MACHINERY

Of the MOST APPROVED AMERICAN PATTERNS.

GOLD MILLS.

The California pattern of Gold Stamp Mill is universally accepted as the most perfect, economic, and efficient made.

We have over 900 stamps in successful work in the various Western Gold Districts.

SILVER MILLS.

Silver amalgamation in Pans is essentially an American system evolved after years of work on the rich silver mines of Nevada.

We have over 500 Stamps, with necessary pans, settlers, roasting furnaces, &c., all of our own manufacture, at work in different silver camps of the United States, Mexico, and South America, and Phillipine Islands, Asia.

CONCENTRATION MILLS

Of the most approved German pattern and arrangement, or with Stamps and Frue Vanner Concentrators for low grade silver ores, light in lead. We have over 20 large German pattern mills at work on lead, zinc, or copper ores, and numerous Vanner mills on ores never before successfully concentrated.

Mining Pumps, Cornish pattern, of the largest sizes. **Hoisting Engines,** from 4 h.p. up to the largest direct-acting engines to sink 3000 feet.

SMELTING WORKS.

We have 80 Water Jacket Smelting Furnaces in use from 20 in. circular up to 54 in. by 60 in. for lead and silver smelting; and special High Jacket Furnaces for copper ores.

Engines of any size, plain slide valve, Corliss, compound Corliss, Boilers, all sizes. **Leaching Mills, Hallidie Wire Rope Tramways. Comet Crusher,** with capacity of 12 to 20 tons per hour. **White, Howell. Bruckner, and Stetefeldt Roasting Furnaces, &c.**

We have had twenty years' experience in the manufacture solely of MINING MACHINERY, and have special facilities for shipping to all foreign parts through our New York Office, where all details of clearance, shipment, and insurance are conducted. Our machinery is already well known in Mexico, Peru, Chili, Venezuela, Honduras, and other South American countries.

Correspondence solicited. Descriptive Circulars and Catalogues on application.

FRASER AND CHALMERS.

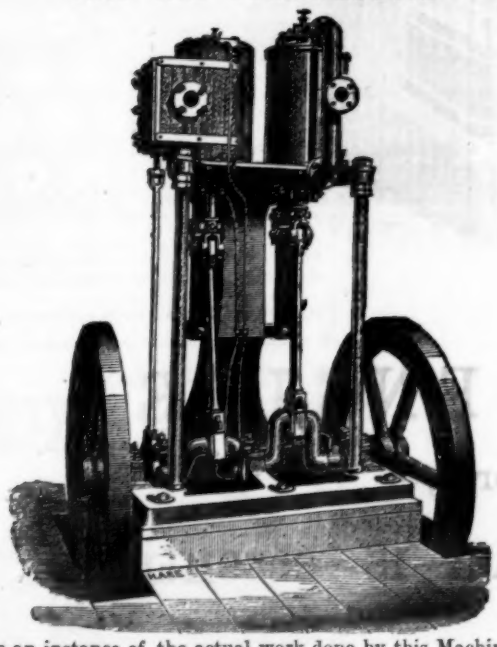
PRINCIPAL OFFICE AND WORKS.	NEW YORK OFFICE.
Fulton and Union Streets, Chicago, Ill, U.S.	No. 2, Wall Street, New York, U.S.

COLORADO OFFICE—CHEESMAN BLOCK, DENVER.

THE

"Champion" Rock-borer

AND AIR COMPRESSOR.



As an instance of the actual work done by this Machinery in various kinds of ground, some of it the hardest rock, it may be mentioned that in Cornwall, irrespective of the work performed by the "Champion" Rock-borers and Air-compressors purchased by various Mines, the drivage, rising, sinking, and stoping done by contract by the Proprietor with his own Machinery now amounts to over 1150 fathoms.

Several of these Air-compressors, ranging from 3½ to 12 tons in weight may be seen in constant work in the Camborne Mining District.

R. H. HARRIS,
ENGINEER,
63, QUEEN VICTORIA STREET, LONDON.

KIRKSTALL, BOWLING, AND STAFFORDSHIRE BAR IRON

RAILS—RAILS—RAILS—

New, slightly defective.

F.B. SECTION—BULL HEAD—DOUBLE HEAD—
10, 12, 14, 16, 18, 20, 24, 30, 40, 50, 60, 70, 75, 80 lb. per yard.
Sections on application to

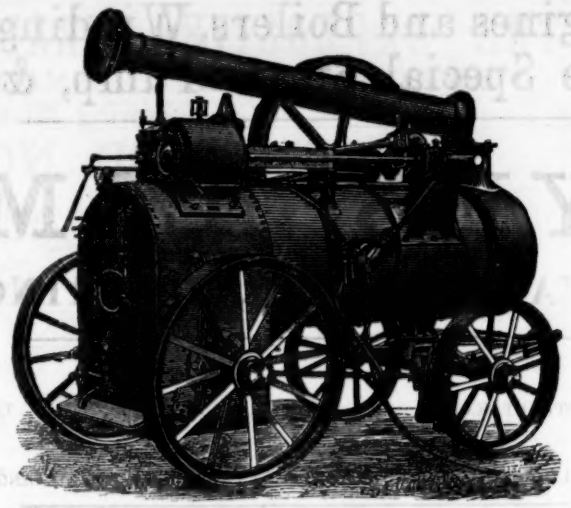
WILLIAM FIRTH, WATER LANE, LEEDS.

POINT and CROSSINGS with all Fittings complete.
2000 tons in stock ready for delivery.

CLAYTON AND SHUTTLEWORTH,

STAMP END WORKS, LINCOLN, AND 78, LOMBARD STREET, LONDON.

☞ *The Royal Agricultural Society of England have awarded Every First Prize to CLAYTON and SHUTTLEWORTH for Portable and other Steam Engines since* 1863, *and Prizes at every Meeting at which they have competed since* 1849.



Steam Engines, portable & fixed

For Coals, Wood, Straw, and every kind of Fuel.

Thrashing Machines.

Straw, Corn, and Hay Elevators.

Chaff Cutters for Steam Power.

Grinding Mills.

Saw Benches.

Traction Engines, &c.

GOLD MEDAL AND FIRST CLASS CERTIFICATE at the Calcutta International Exhibition 1883-4.
THE ONLY GOLD MEDAL
AWARDED FOR
PORTABLE STEAM ENGINES.

GOLD MEDALS AND OTHER PRIZES have been awarded to CLAYTON AND SHUTTLEWORTH at all the important International and Colonial Exhibitions, including
LONDON, 1851 and 1862;
PARIS, 1855, 1867, and 1878;
VIENNA, 1857, 1866, and 1873.

Catalogues in English and all European Languages free on application.

THOMAS TURTON AND SONS,

MANUFACTURERS OF

Cast Steel for Mining and other Tools, Shear, Blister, and Spring Steel.

FILES OF SUPERIOR QUALITY.

EDGE TOOLS, HAMMERS, PICKS, AND ALL KINDS OF TOOLS FOR RAILWAYS, COLLIERIES, ENGINEERS, AND CONTRACTORS
LOCOMOTIVE ENGINE, RAILWAY CARRIAGE, AND WAGON SPRINGS AND BUFFERS.

SHEAF WORKS, AND SPRING WORKS, SHEFFIELD.

LONDON OFFICES:—90, CANNON STREET, E.C.

POTENTITE.

This unrivalled Explosive, as manufactured by the **New and Perfected Machinery** of the Company, is perfectly safe for transit, storage, and use, and is employed in every description of Mining or Quarrying Work, for Tunnelling, Pit Sinking, Engineering Work, and Submarine Operations, with the most complete success and satisfaction.

Potentite does NOT contain its own MEANS OF IGNITION, is free from Nitro-Glycerine, and its SAFETY has been speciall demonstrated by public experiments.

Its strength is unequalled. Its action is certain.

In action it gives off neither flame, smoke, nor offensive smell. By its use labour is economised, as work can be resumed immediately after the shot is fired.

POTENTITE is specially adapted for export to hot climates, as it is unaffected by heat, and is free from dangerous exudations.

POTENTITE IS THE SAFEST STRONGEST, AND WORK FOR WORK, CHEAPEST EXPLOSIVE IN THE MARKET.

For particulars and prices, apply to—

THE POTENTITE COMPANY. LIMITED.

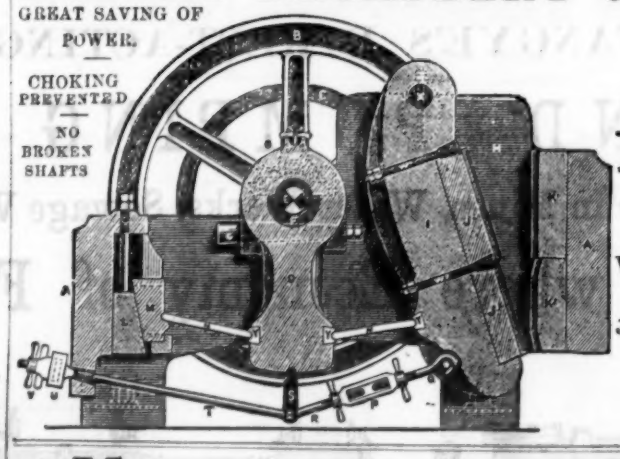
HEAD OFFICE—3. FENCHURCH AVENUE, LONDON. E.C.

ROBERT BROADBENT & SON, STALYBRIDGE,

GREAT SAVING OF POWER.

CHOKING PREVENTED

NO BROKEN SHAFTS



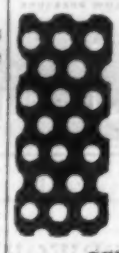
PATENTEES AND SOLE MAKERS
OF THEIR WELL-KNOWN

Patent Improved BlakeStonebreakers and Ore Crushers,

With PATENT DRAW-BACK MOTION,
WHICH DISPENSES WITH ALL SPRINGS.
JAWS adaptable either for CUBING or CRUSHING.
Reversible in Four Sections, with Surfaced Backs.
Steel Toggle Cushions.

PRICES, PARTICULARS, AND TESTIMONIALS ON APPLICATION.

MANCHESTER WIRE WORKS.



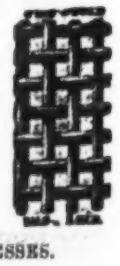
NEAR VICTORIA STATION, MANCHESTER.
(ESTABLISHED 1790).

JOHN STANIAR AND CO.,

Manufacturers by STEAM POWER of all kinds of Wire Web, EXTRA TREBLE STRONG for

LEAD AND COPPER MINES.

Jigger Bottoms and Cylinder Covers woven ANY WIDTH, in Iron, Steel, Brass, or Copper.
EXTRA STRONG PERFORATED ZINC AND COPPER RIDDLES AND SIEVES.



PERFORATED IRON, STEEL, COPPER, AND ZINC PLATES IN VARIOUS DIMENSIONS AND THICKNESSES.
Shipping Orders Executed with the Greatest Dispatch

DYNAMITE, GUN-COTTON, AND PATENT ELECTRIC FUSES,

FOR MINING, TUNNELLING, SUBMARINE, AND ALL KINDS OF BLASTING OPERATIONS.

THE EXPLOSIVES COMPANY (LIMITED)

30 AND 31, ST. SWITHIN'S LANE, LONDON, E.C.

MELBOURNE EXHIBITION.

GOLD AND SILVER MEDAL AWARDED for
Steam-Engines and Boilers, Winding Engines,
the Special Steam Pump, &c.

TANGYES LIMITED,

CORNWALL WORKS, BIRMINGHAM.

LONDON:
TANGYE BROTHERS 35, QUEEN VICTORIA STREET, E.C.

MANCHESTER:
TANGYE BROTHERS, DEANSGATE

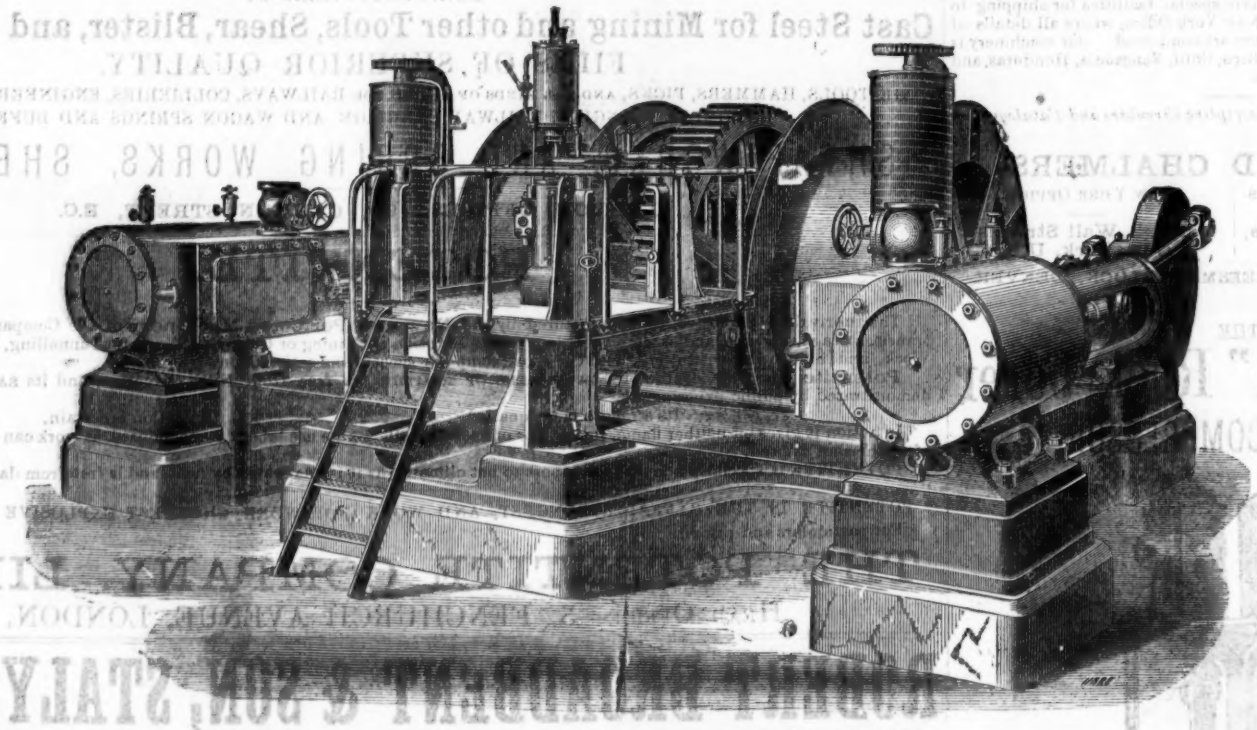
NEWCASTLE:
TANGYE BROTHERS ST NICHOLAS BUILDINGS

GLASGOW:
TANGYE BROTHERS ARGYLE STREET

TANGYE'S IMPROVED

HAULING & WINDING ENGINE,

WITH STEAM REVERSING GEAR.

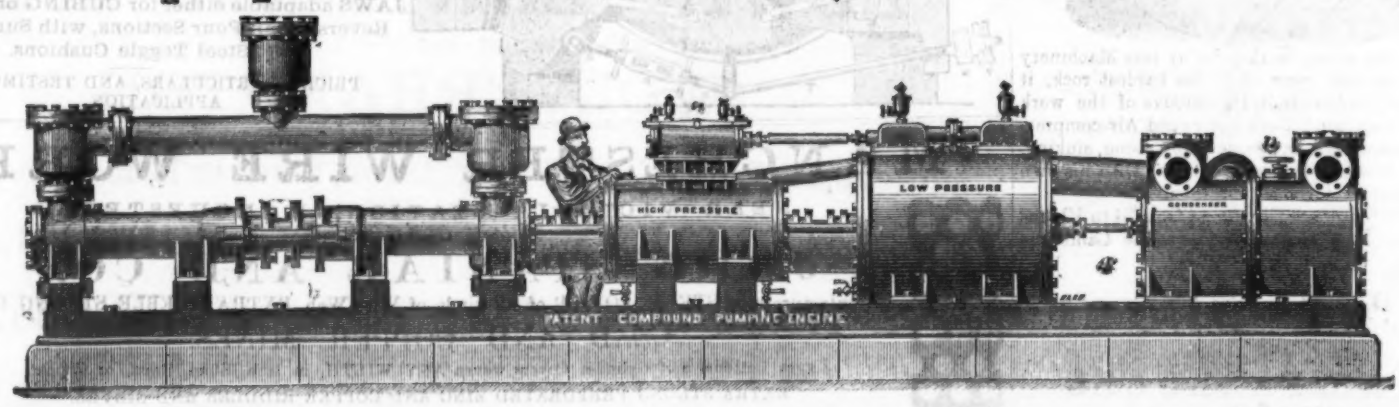


TANGYE'S DIRECT-ACTING

COMPOUND PUMPING ENGINE

For use in Mines, Water Works, Sewage Works,

And all purposes where Economy of Fuel is essential.



SUCCESSFULLY WORKING at the NEWCASTLE and GATESHEAD WATERWORKS, the ADELAIDE, CHESTERFIELD and BOYTHORPE, WYKEN, and other COLLIERIES.

CATALOGUES FORWARDED ON APPLICATION.

THE BLAKE-MARSDEN NEW PATENT IMPROVED STONE BREAKERS AND ORE CRUSHERS.

ORIGINAL PATENTEE AND ONLY MAKER.

H. R. MARSDEN,

ALSO PATENTEE AND ONLY MAKER OF THE

NEW PATENT FINE CRUSHER OR PULVERIZER,

FOR REDUCING TO AN IMPALPABLE POWDER, OR ANY DEGREE OF FINENESS REQUIRED,

GOLD QUARTZ, SILVER, COPPER, TIN, ZINC, LEAD

AND ORES OF EVERY DESCRIPTION;

Also Cement, Barytes, Limestone, Chalk, Pyrites, Coprolite, &c., &c. These Machines are in successful operation in this country and abroad, and reference to users can be had on application.

PATENT REVERSIBLE CUBING and CRUSHING JAWS, IN FOUR SECTIONS,

WITH PATENT FACED BACKS, REQUIRING NO WHITE METAL IN FIXING.

CRUCIBLE CAST-STEEL CONNECTING RODS. RENEWABLE TOGGLE CUSHIONS, &c.

OVER **4000** IN USE.

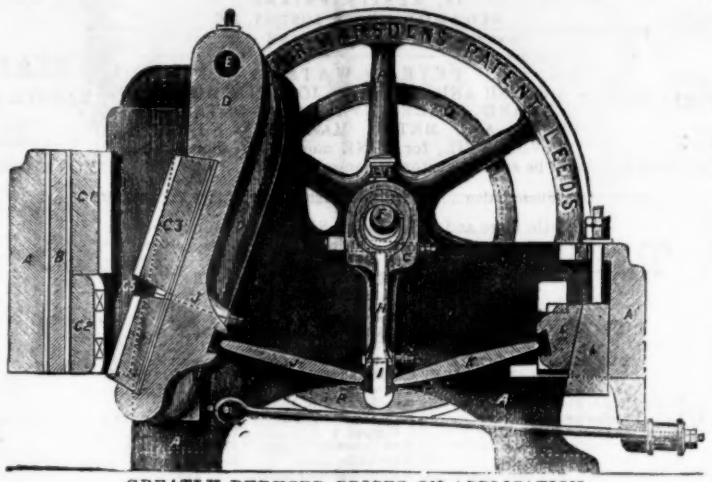
AWARDED OVER

60

FIRST-CLASS GOLD AND SILVER MEDALS.

ADOPTED BY THE PRINCIPAL CORPORATIONS, CONTRACTORS, MINING COMPANIES, &c., IN ALL PARTS OF THE WORLD.

ROAD METAL BROKEN EQUAL TO HAND, AT ONE-TENTH THE COST.



GREATLY REDUCED PRICES ON APPLICATION.

EXTRACTS FROM TESTIMONIALS.
PULVERIZER.

"I have great pleasure in bearing testimony to the merits and capabilities of your patent combined fine crusher and sieving apparatus. I have tried it on a variety of ores and minerals, and it pulverizes them with equal success. You can put in a small paving stone and bring it out like flour."

"In reply to your favour, I have much pleasure in informing you that the 12×3 Pulverizer we had from you is giving us every satisfaction. The material we are operating on is an exceptionally hard one. I am well satisfied with its working."

"Our experience is that the motion and mechanical arrangements of your machine are the best for pulverizing that we have ever met with."

"The reports from our mines as regards the working of your Fine Crusher (20×5) recently supplied are very favourable, although we cannot quote you exact figures. On being got into position it was tried *by hand*, with the result that it made short work of the biggest pieces of ore we put into the hopper. You might say how long you would take to deliver another of the same size."

"As I once before stated, your machine is a perfect pulverizer."

"I am sure the machine will be a success, and a great one, and there is any amount of demand for such a machine. We can work it with 20 lbs. of steam, and our engine, which is a 12-h.p., plays with the work, in fact we run the Stonebreaker and the Pulverizer both together with 35 lbs."

EXTRACTS FROM TESTIMONIALS.—STONEBREAKER.

"I now order Three of your Stone Crushers, size 15 × 10, to be of your very best construction, and to include two extra sets of Jaws and Cheeks for each. The last two 24×13 machines you sent me, which are at work in this colony, are doing very well. You will soon find that the railway contractors will adopt your machines in preference to the colonial ones—two of which I have. I know other contractors have had as many as nine of them, which have not given very good satisfaction. Once they know of yours thoroughly, I believe you will do a good trade with the colonies. For reference of the high character of your constructions you can refer to me as having used them with the very best results, both in New Zealand and this colony, and much prefer them to the colonial article, both in point of construction and less liability to go out of order. The material we are crushing is very hard blue stone, for railway ballast purposes. Push on with the order as quickly as possible; I do not think it necessary to have any engineering inspection. I have brought your machines prominently under the notice of all large contractors in this colony, likewise the Government. Many of the contractors have spoken to me in reference to their capabilities, and I could only tell them that they are by far and away the best and most economical I ever used. The very fact of me having purchased now Eleven from you at various intervals and various sizes, and two above 12 years ago, and having tried all the other makers, is sufficient guarantee of the capabilities and the working of your machines. Yours in every way surpass all others."

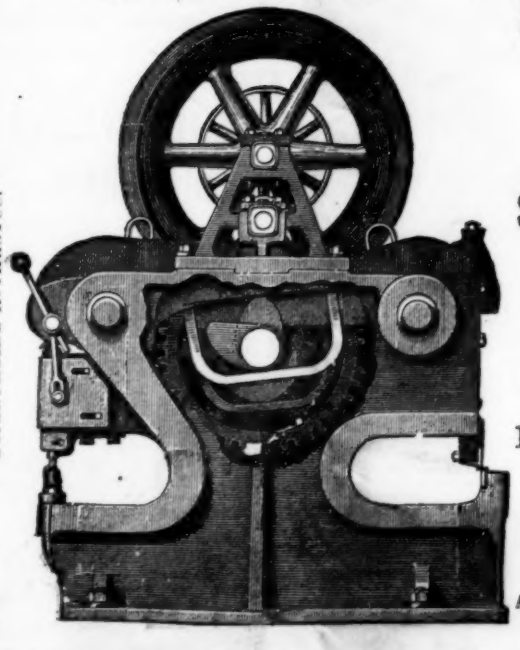
"Some of your testimonials do not give your machines half their due. I have seen men hammering away on a big rock for a quarter of a day which your machine would reduce to the required size in a quarter of a minute. I would guarantee that your largest size machine would reduce more of the Cornish tin capels (which is the hardest rock of England) in a day than 200 men, and at 1-25th the cost."

FOR CATALOGUES, TESTIMONIALS, &c., APPLY TO THE SOLE MAKER,

H. R. MARSDEN, SOHO FOUNDRY, LEEDS.

JOHN CAMERON'S

FLY-WHEELS ON BOTH SIDES.



SPECIALITIES ARE HIS

STEAM PUMPS

FOR

COLLIERY PURPOSES.

Specially adapted for forcing Water any height

ALSO, FOR

SINKING, FEEDING BOILERS AND STEAM FIRE ENGINES,

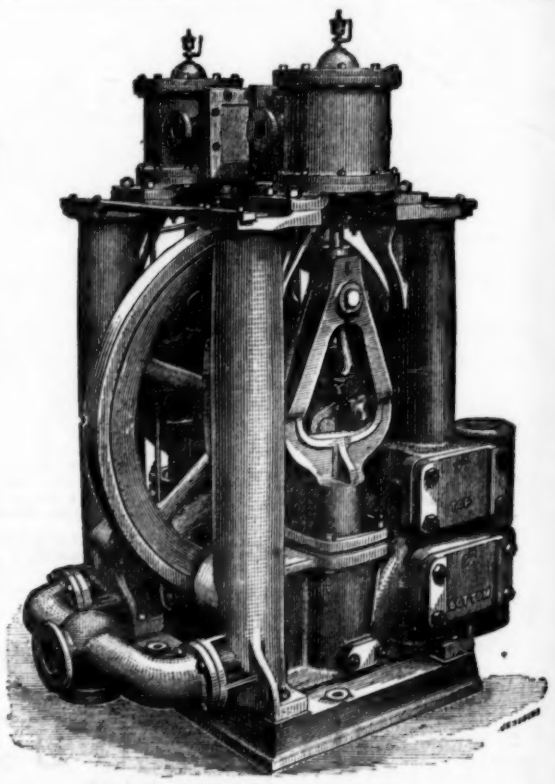
Of which he has made over 9000.

ALSO, HIS

PATENT CAM AND LEVER PUNCHING AND SHEARING MACHINES.

Works: Oldfield Road, Salford, Manchester.

AGENTS { For LONDON and DISTRICT—PRICE and BELSHAM, 52, QUEEN VICTORIA STREET, E.C.
For NEWCASTLE and EAST COAST—E. BECKWITH AND CO., BONNERSFIELD, SUNDERLAND.



HEPBURN'S PUMP LEATHER WATERPROOF

By a special method of preparation this leather is made solid, perfectly close in texture, and impermeable to water; it has, therefore, all the qualifications essential for pump buckets, and is the most durable material of which they can be made. It may be had of all dealers in leather, and of—

HEPBURN AND GALE, LIMITED,
TANNERS AND CURRIERS,
LEATHER MILL BAND AND HOSE PIPE MANUFACTURERS,
LONG LANE, SOUTHWARK, LONDON.
Prize Medals, 1851, 1855, 1878, for
MILL BANDS, HOSE, AND LEATHER FOR MACHINERY PURPOSES.

SPECIAL.

PULLEY BLOCKS

AND

BRASS FERRULES

ALL KINDS.

HOME AND EXPORT. CHEAPEST AND WARRANTED.

SEND FOR PRICES.

GRIMSHAW & CO.

Mechanical Engineers, Brass Ferrule Makers, &c.,

ACCRINGTON, LANCASHIRE.

ESTABLISHED 1825.

EDWIN LEWIS AND SONS,

Patent Tube Works, MONMORE GREEN and Britannia Boiler Tube Works, ETTINGSHALL,

WOLVERHAMPTON.

MANUFACTURERS OF

Lapwelded & Buttwelded Wrought-iron, Steel, or Homogeneous Tubes

FOR EVERY

COLLIERY OR MINING PURPOSE.

J. WOOD ASTON AND CO., STOURBRIDGE

(WORKS AND OFFICES ADJOINING CRADLEY STATION),

Manufacturers of

CRANE, INCLINE, AND PIT CHAINS,

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS, RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions

WELDED STEEL CHAINS { FOR CRANES, INCLINES, MINES, &c., MADE ALL SIZES.

Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors) at their offices, 26, FLEET STREET, where all communications are requested to be addressed.—*May 24, 1884.*